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RECURRENT PYELONEPHRITIS DURING PREGNANCY*

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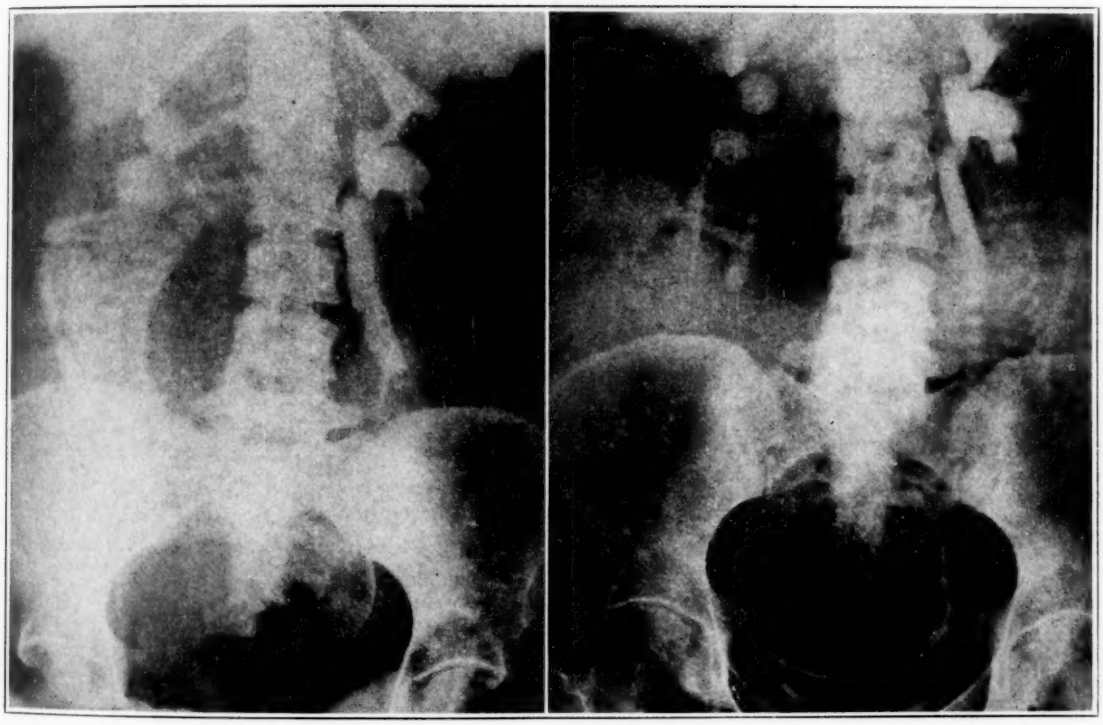
BOSTON

AFTER completion of a pregnancy during which pyelonephritis has been a complication, both the patient and her physician are interested in the question, Will there be a recurrence of "pyelitis" if another pregnancy ensues? An answer, not necessarily correct for an individual, can be given on a statistical basis. The probabilities of recurrence, as well as the factors that may influence a recurrence, are the purpose of this paper; the data were derived from the records of 72 patients with pyelonephritis associated with pregnancy who later returned to the hospital for one or more subsequent pregnancies.



A B

FIGURE 1.

This patient, a para II, had a right pyelonephritis during the seventh month of pregnancy. A *shows the pyelographic changes in the pelvis and ureter.* B, *taken three years later when the patient was again pregnant, shows nearly identical anatomic changes.*

During their first pyelonephritis of pregnancy, 70 of the 72 patients had pyelonephritis before delivery; in 2, the pyelonephritis occurred immediately afterward. Forty-three patients were in a febrile phase while in the hospital, and 29 were

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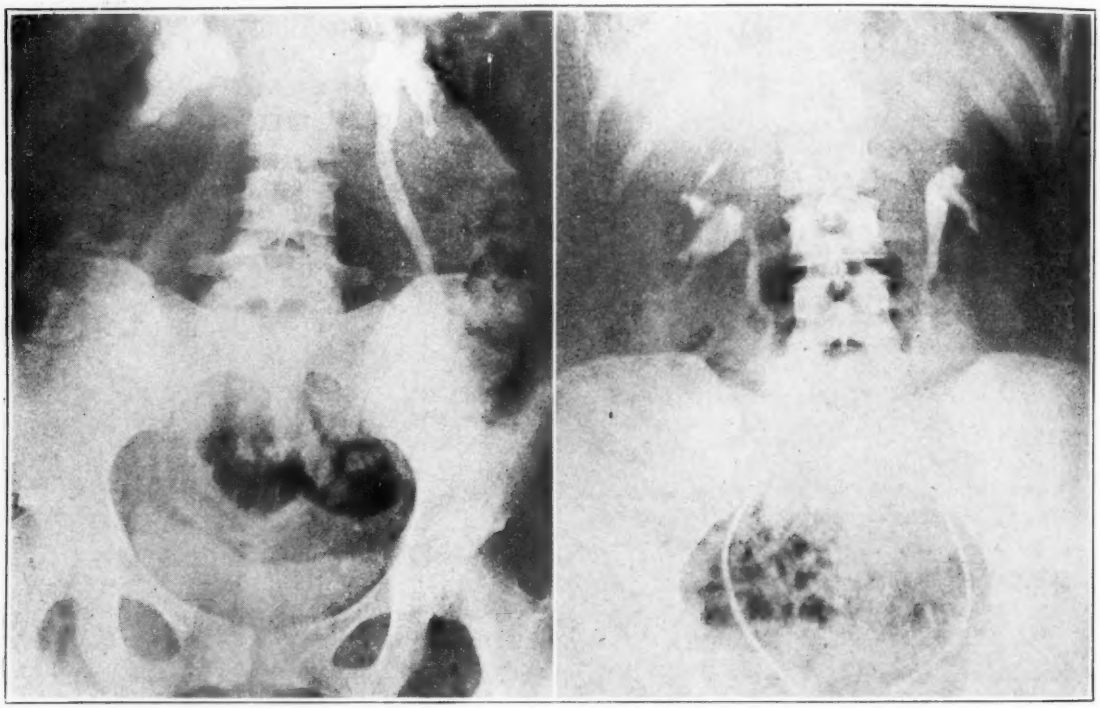
admitted or seen following their febrile attack. Approximately 58 per cent were primiparas. A past history indicative of an inflammatory type of kidney disease was obtained in 17 per cent. Urinary studies demonstrated a bacillary type of infection in 91 per cent, gram-positive cocci in 5 per cent and mixed infection in 4 per cent. The clinical findings indicated involvement of the right kidney alone in 48 per cent, bilateral disease in 32 per cent and left renal infection alone in 20 per cent. Cystoscopic diagnoses were made in 34 patients.

Studies of renal function were not done routinely at the time of the first observations. The blood chemical findings, which of course did not measure slight changes in renal function, were normal in 40 cases.

This brief summary of the clinical data involving the initial attack offers nothing new on the subject, but the following material, which shows the course of events when the patients returned in a subsequent pregnancy, is of interest. In approximately 65 per cent, the subsequent pregnancy was normal, with no clinical evidence of pyelonephritis. Seventeen patients, or 23 per cent, developed pyelonephritis in subsequent pregnancies; the remainder — about 12 per cent — had toxemia in subsequent pregnancies. The 17 patients who developed recurrent pyelonephritis had a total of twenty-two pregnancies following the original one with pyelonephritis. The interval between pregnancies varied from one to five years, with an average of three years.

The importance of a cure of the urinary infection either during pregnancy or in the interval between pregnancies has been emphasized repeatedly.[1, 2] Likewise, careful examination of a catheter specimen of urine by stained sediment or culture has been stressed as essential in determining cure. Data from this series of cases support both contentions. Of 43 patients in whom a sterile urine was obtained post partum following their initial pyelonephritis of pregnancy, 8, or 19 per cent, developed pyelonephritis in a subsequent pregnancy. Of 36 patients whose urine was either still infected or unreported during the interval between pregnancies, 14, or 42 per cent, developed pyelonephritis in a subsequent pregnancy. (The total of 79 patients, instead of 72, is conditioned by the fact that a few patients had both a subse-



A B

FIGURE 2.

This patient, a primipara, had a right pyelonephritis during the sixth month of pregnancy. A shows the typical pyelographic changes in the upper urinary tracts. B, taken nine months later, shows considerable resolution of the hydronephrosis and hydroureter.

quent normal pregnancy and one complicated by pyelonephritis.) If one assumes that at least some of the patients whose urine was unreported probably had a sterile urine between the interval of pregnancies, the rate of recurrence of pyelonephritis in women who begin their pregnancy with an infected urine would be even greater than the 42 per cent just quoted.

Thus, a woman who has had pyelonephritis associated with pregnancy appears to have about one chance in four or five of developing pyelonephritis during a later pregnancy. The likelihood that pyelonephritis will recur during a later pregnancy, however, is greatly increased if she enters the succeeding pregnancy with an infected urine. Entering pregnancy with a latent or chronic pyelonephritis, she has only one chance in two of avoiding a febrile attack; if the pyelonephritis has been cured during the interval between pregnancies, the chance of her having a febrile attack is reduced to less than one in five.

Pyelographic data were obtained in 55 patients, in 29 of whom cystoscopy and retrograde pyelography were performed. Intravenous pyelography was used in the remaining 26. Two illustrations of the pyelographic studies are instructive. Figure 1 illustrates delayed secretion of the intravenous dye by the right kidney during two pregnancies three years apart, each of which was complicated by right pyelonephritis. It is interesting to observe the same degree of ureteral dilatation in the two pregnancies even though the position of the fetal spine is reversed. Figure 2 illustrates the degree of anatomic recovery that may take place following pregnancy.

To demonstrate the relation of hypertension to pyelonephritis, we have noted the blood pressure readings from the charts of 17 patients who had recurrent pyelonephritis (Table 1). Although the average interval between pregnancies was not unusually long, there appears to be no tendency toward hypertension during a succeeding pregnancy as the result of pyelonephritis during a former pregnancy.

TABLE 1. *Blood Pressures in Patients with Recurrent Attacks of Pyelonephritis of Pregnancy.*

	First Attack		Subsequent Attack	
CASE NO.	YEAR	BLOOD PRESSURE	YEAR	BLOOD PRESSURE
		mm. Hg.		*mm. Hg.*
5	1934	114/60	1938	110/70
7	1936	116/68	1939	?/?
8	1936	133/88	1938	158/108 to 127/78
11	1931	120/70	1936	110/70
12	1935	110/64	1937	112/88
16	1934	120/70	1936	114/64
17	1934	110/60	1938	112/80
20	1934	114/60	1938	110/70
21	1934	140/86	1938	128/80
25	1934	112/68	1936	118/90
26	1935	106/68	1937	110/80 to 108/90
28	1935	100/58	1939	118/60
31	1931	118/70	1936	?/?
33	1936	110/70	1938	100/58
34	1937	112/80	1939	128/80
35	1934	136/90	1937	104/72
37	1934	150/88	1938	128/80

SUMMARY

In a series of 72 patients, recurrent pyelonephritis of pregnancy had an incidence of 23 per cent. If the urine becomes sterile during the interval between pregnancies, the chance of recurrent pyelonephritis is less than one in five, and if the urine remains infected, the chance is about one in two.

There appears to be no tendency toward hypertension during a succeeding pregnancy as the result of pyelonephritis during a previous pregnancy.

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THE GOVERNOR'S ADDRESS*

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CONCORD, NEW HAMPSHIRE

THE participation of the state in the practice of medicine, from both the physician's and the state's point of view, extends over the last hundred and fifty years. I propose to deal with the incidents and developments that have shaped our present-day state health program, the relation between the state medical profession and expanding government control, and subsidy of state health.

The New Hampshire Medical Society is closely associated with early efforts to promote state responsibility for common health conditions. Following its incorporation by the legislature in 1791, the Society promoted standards for physicians, an action that shows clearly its concern for public health and welfare. Numerous later acts of the Society indicate its concern with the public at large. In this respect, and proudly, it was the forerunner of an organized public-health agency. Sensitive to its responsibility to New Hampshire citizens, the Society adopted the following two resolutions in 1824:

> RESOLVED, That the practice of depositing medicines in stores, taverns and grog-shops, with directions to the common people for their use, is not only pernicious to the health and morals of society, but derogatory to the character and reputation of the physicians.
>
> RESOLVED, That we disapprove the encouragement held out to the public through the medium of pompous advertisements, that the daily use of bitters is conducive to health; and we consider the facility with which Stoughton's Elix. Spec., bitters etc. may be secured at country stores, one of the most direct means of inducing habits of intemperance (the bane of society) of any within our knowledge.

Early in the nineteenth century, the Society attempted to establish a medical school in Concord, hoping to elevate the standards of professional public-health guardians. The Society's bitter struggle to protect the community from the inducements of the infamous Concord Botanic Infirmary is another indication that it was not passive in armoring the community against the invasion of a medical hoax.

The Society agitated early for control of vital statistics by the State. In 1848, it appointed a committee to study the problems relating to birth and death registration, and to bring the issue before the legislature.

In 1868, Dr. Granville P. Conn, a man whom I knew as an able physician and energetic leader in the early field of public health, joined the committee of the Society. Not at once successful in putting through state legislation, he cut through the jungle of indifference, ignorance and tradition. Indirectly prodding the State by initiating local ordinances, he finally succeeded with similar state legislation, but not for a decade.

The New Hampshire Medical Society entered the campaign for a state board of health largely as the result of an address delivered in 1872 by a Californian, Dr. Thomas M. Logan. Speaking as a realist, from experience gained in California's campaign for similar action, Dr. Logan outlined the duties of a state board of health as follows:

> To create an interest in our work among the lay as well as the professional public. . . .
>
> To raise up friends in all parts of the state to cooperate with us in our investigations in gathering sanitary information and in spreading it abroad. . . .
>
> To encourage the formation of local boards of health, the registration of births, deaths and marriages, whereby mortality and other reports touching the vital condition of the people may be obtained.

Dr. Logan, like New Hampshire's Dr. Conn and others in the nation, was more than a diagnostician of bodily ills. He was an economist, a statesman and a prophet — all these, because he envisioned the broad economic and human influence of a sound program of state health regulation.

Dr. Conn, in the enthusiastic wake of Dr. Logan's appeal, was assigned to draft a bill for a state board of health and to secure its passage. Toward that end, he labored for a decade. He visited, he lectured, he taught, he influenced. For ten years, he carried on with prodigious energy, creating and sustaining interest in his public-health ideal. The records of the Society are marked during this period with efforts to create a state board of health. Since it is material available to all in the published reports of these years, I shall not deal with it. In the year prior to the passage of the act creating the board, the president of the Society wrote in his annual address:

> A physician is often considered as a kind of fire extinguisher, to be sent for in time of conflagration, but as rather a useless member of the body politic when there is no actual crisis. To think this way is to wholly misunderstand the work of the professions. . . . The physician should have the same pre-

*An address delivered by the Governor of New Hampshire at the one hundred and fiftieth Anniversary Dinner of the New Hampshire Medical Society, Manchester, May 14, 1941.

> rogative in the state as in the family, and no man can be properly said to be a conscientious physician who does not, if allowed, have a general, vigilant, but not impertinent oversight of the hygienic arrangements of the household of which he is the sanitary inspector and adviser.

In 1881, the state legislature created a state board of health. Dr. Conn, exultant in his success, was at once appointed to the Board.

The Board of Health, under the terms of the act, was to consist of four appointees: three physicians and a civil engineer. It was granted license to elect its officers and to institute rules necessary to guard against epidemics or contagious disease, to be dispensed to citizens without cost. Cognizance was taken of sanitation in public buildings. Vital statistics were taken over by the Board. Local boards were to be assisted and advised; conditions in localities were to be investigated. That the people of the State should be served was pre-eminent in the writing of the act.

Examination of public-health legislation in New Hampshire is a study in itself. In 1899, all State Board of Health regulations were made enforceable by an act that made their violation punishable by fine. Also in 1899, the practice of embalming was brought under regulation, and thus the Board's authoritative arm stretched into a new orbit. In 1901, the Board was "authorized to establish and equip a laboratory . . . for the chemical and bacteriological examination of water supplies, milk, food products and drugs; and the investigation of cases and suspected cases of diphtheria, typhoid fever, tuberculosis, pneumonia, malaria glanders and other infectious and contagious diseases." A chemist was to make investigations and analyses of public water supplies and of foods and drinks offered for sale in markets, to discover adulterated and fraudulent products. A quarterly bulletin was to be published. Moreover, all investigations by the Board were to be made free to the people of the State. In the same year, vital statistics were indexed by law. The following year, an act provided for the restriction of communicable diseases. The procedures familiar to all physicians today were made law: quarantine, case reporting to local and state boards of health, placarding of quarantine premises and disinfection of infected premises.

In 1903, the legislature passed an act to enable the State Board of Health to prevent the furnishing of contaminated water for domestic consumption, and in the same year gave the superior court jurisdiction in equity to enforce the orders of the Board. The session of 1907 was successful in pure-food legislation, with an act preventing the manufacture or sale of adulterated or misbranded or poisonous foods, drugs, medicine and liquors. In this, the Board was to assume regulatory supervisory powers.

At the next session, the powers of the Board were further extended by an act providing for the establishment of dispensaries for the detection and treatment of tuberculosis. In the same year, supervisory power was given the State Board of Health over the manufacture and sale of cocaine products. Other legislation in 1909 provided for sanitary inspectors, embracing the examination of meats and general food products and of local sanitary conditions.

As an extension of the tuberculosis clinics and in an effort to check the spread of the disease, the Board was charged, in 1911, with the registration of all cases. The same year was also marked by its authority to enter and inspect establishments producing or selling food. With an act relating to child labor, the State Board of Health entered the province of public-welfare work, for the act authorized the regulation of child labor by the staff. Later, the Board assumed control of communicable diseases in unincorporated districts; thus, it acknowledged responsibility for the health of those in the rural areas of the State. For many years, members of the medical and nursing professions had campaigned for legislation to cover the care of inflammation of the eyes in the newborn — ophthalmia neonatorum. The Board was authorized to make regulations designed to prevent this disease. Furthermore, an act was passed to provide for certified and inspected milk.

During the next three sessions of the state legislature, medical inspection of schools was made compulsory, as was the formal reporting of occupational diseases. Regulations were made dealing with the discharge of sewage into streams, and providing for the construction and enlargement of public water systems. The control of the Board over infantile eye diseases was increased, and the distribution of antitoxins was provided for. The Board was also authorized to govern the sanitation of schoolhouses and to examine their teachers and janitors for communicable diseases, and power was given to license and inspect private asylums and sanitariums.

The trend during these first thirty-nine years is obvious. More than a trend, it is a lively and colorful pageant of human betterment. The demand for the services of the State Board of Health increased. Each session of the legislature witnessed the passing of additional laws, added health burdens being placed on the staff of the Board. It has been a consistent rise — even to the present day. This historical development of New Hamp-

shire's Board of Health led to the broad program in effect today.

Increased responsibility and added functions were accompanied, inevitably, by a mounting health budget. Always, leading to the battle front of progressive government, there must be a pipeline of monetary supply. It must be maintained; it must be guarded; and even more important, it must be regulated. That is the strategy of "good government." There is, however, an interesting balance between function and cost. This is evident regarding the activities of the Board of Health in New Hampshire.

Under the terms of the original statute of 1882, the total cost of the Board's operation was not to exceed $3,000 in any year — a calculation that was both naïve and optimistic; it suggests the man who makes his "down payment" and walks away with the inflated pride of full ownership. Actually, the operation of the Board during the next year approached the $5,000 mark, and by 1886, the total annual expenditure was well over $8,000. The following years, up to the turn of the century, averaged between $4,000 and $7,000. In 1902, the year in which the Laboratory of Hygiene went into operation, the cost of the Board rose to more than $14,500. This was a high level for the decade that followed. In 1913, because of the salaries of chemists, bacteriologists and sanitary inspectors and the cost of vital statistics, the budget expenditures increased to more than $16,000. This level was maintained, more or less, until 1920, when the total expenditure of the board reached $27,000. Five years later, this figure was shadowed by a total expenditure of more than $70,000, a cost very nearly repeated in 1930.

The initial federal grant-in-aid for state health activities came in 1936, when the State availed itself of $8,423. In the same year, the State contributed, in addition, $73,671. From $8,000 in 1936, federal money expended for health purposes rose in 1937 to $52,000, and to more than $83,000 in 1938. In the latter year, the state appropriation and expenditures exceeded this amount, bringing the cost of public-health functions in the State to more than $167,000. The federal grant in 1939 rose to more than $100,000; this was matched by state funds of $85,000. In 1940, the last full year available, federal and state expenditures totaled almost $205,000. These five years, 1936 through 1940, have witnessed a total expenditure of more than $362,000 in federal funds, matched by $410,000 in money contributed by the State, an aggregate expenditure on state public health of nearly $772,000. Dr. Conn, who asked for a few hundred dollars for birth and death registration, would have been startled at these figures.

The annals of individual achievement are no more praiseworthy in any section of the country than in New Hampshire among the members of the medical profession, who toiled long and arduously for the gains we count today; moreover, they often toiled without adequate clinical and surgical equipment. They were men who generously subordinated their own comfort to communal welfare. They were familiar with the long journeys to hillside homes. Often, they were deprived of the nourishment of sleep when the wheel of rest was suddenly halted by a neighbor-messenger. In their time, they were the claim adjusters of human affairs, assuaging malice, greed and misunderstanding. They sat through the long nights to listen to the caricature of men's lives as it sifted through the veil of half-consciousness. In many respects the first citizens of the State, they were welcomed to the great aristocratic residences and hailed in the remote, silent reaches of the northern logging roads. With scant knowledge of many medical subjects now commonplace, they often resorted to desperate means in saving human life — and with incredible success. A stalwart lot, whose business was rooted deep in human behavior, they frequently applied the anesthetic of prudence when skill was lacking. They were the first proponents of collective and organized public health, for they were the itinerant teachers of elementary hygiene in the home. Whereas today a relatively complicated scheme operates, they once gave generously of their efforts, sometimes ushering in new life, six miles from home, for the "munificent fee of fifty cents." We have increased our mastery over time and space. We have organized our individual experience and resources in a state board of health. These are distinct advances, but in many respects, earlier men were the conquerors of problems more formidable than those of the present day.

New Hampshire is spending heavily on public-health projects. The burden of this to the taxpayer has a significance that cannot be discussed here. The increasingly heavy outlays are also, I am convinced, of vital consequence to physicians in the State. The medical profession is one of the few individual careers left. Increasing governmental participation will standardize the performance of professional men engaged in medical practice. Although the average level may be slightly raised, the medical "artist" will be reduced to uniform work. Increased subsidy means greater uniformity and the loss of the great men of medical science. That, briefly, is the case for the profession itself.

There is also a case for the people of the State, particularly the needy sick. If the sponsors of government-regulated medicine are earnest in their

endorsement of adequate medical care, they will see to it that such care is rendered by professionally competent men; it cannot be provided in any other way. The citizens should be cautious in estimating the ability of legislated medicine to provide competent medical care for the needy, just as careful as they should be in protecting themselves from the advice and treatment of nonmedical practitioners. There is grave doubt whether any body politic can properly assess the needs of the indigent sick. Such action must be left in the hands of the medical profession. The welfare of the sick will be best preserved by continuation of the traditional principle of allowing the patient to choose his physician. That right must be maintained, unless the patient is judged incapable of making the selection. The underlying value of this prerogative is well understood by the medical profession, although often regarded casually by governmental health, welfare and relief administrators.

What is the answer? Must we cease altogether to accept governmental aid in our health program? And, if we do, what is to become of the organization already in motion? I do not believe that we need ignore the aid offered our state units. To do this would be to renounce the obligation of delivering scientific medical care to the people, whether they can afford it or not. No one in the profession is tolerant of that attitude, and if he were, the profession would not long remain tolerant of him. The State Board of Health, like other welfare and relief agencies, must be maintained to meet the demands that education is prompting the people to make. We cannot educate the citizenry to better health and then withhold it from them. The solution rests, I am convinced, with the medical profession itself. A successful program must keep in mind three essential functions: preventive medicine, curative treatment and the care of those chronically ill.

* * *

Thus, from the earliest times there has been a constant demand for increasing state participation in the regulatory controls of the State Board of Health. With this extended control has come a constant demand for ever-increasing amounts of money to perform these functions; the State has met these demands. In general, the requests have come from the medical group and not from the layman. Of course, the money to pay these bills comes, in the final analysis, from the taxpayers. With the growing financial participation of governmental units has come increased control over the functions of public health. This privilege has been claimed on two arguments: that it is economical, and that the organization, or people furnishing the money, has a right to dictate its use. In these days, when the medical profession is rightly opposing state medicine and increased regulations of its practice, I believe that physicians should weigh carefully the advisability of asking for additional governmental participation, lest we receive, in its wake, the state regulation of the practice of medicine.

PERINEAL PHLEGMON*

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BOSTON

THIS paper is based on a study of 36 cases of perineal phlegmon treated at the Boston City Hospital during the last ten years.

Perineal phlegmon, or periurethral gangrene, is referred to as "extravasation of urine" in the older textbooks of urology. It was observation of cases of this disorder that led Colles[1] to the discovery of the superficial perineal fascia; he believed that extravasating urine was confined to the superficial perineal pouch by the anatomic attachments of the fascia, which he described in 1811. So-called "urinary extravasation," or perineal phlegmon, was at that time considered to be due to seepage of urine into the tissues through a tear in the urethra proximal to a stricture. One can readily understand the logic of this concept, since it stems from an era when little was known about bacteria or the chemistry of urine, and the identification of the fluid in the tissues depended entirely on the senses of sight and smell.

In recent years, this mechanistic view of the etiology of perineal phlegmon has been discarded by many. French urologists have claimed for years that perineal phlegmon is due to an infection by anaerobic bacteria.[2] Keyes and McLellan,[3] Herman[4] and Keyes and Ferguson[5] agree with this concept and assert that urine is never found in the tissues of the perineum, scrotum, penis and abdominal wall in cases of perineal phlegmon.

However, some writers on this subject still hold to the old view of urinary extravasation in spite of considerable evidence against such a belief.[6–10] Briefly, this evidence is as follows: lacerations of the urethra through which the seepage of urine might be expected to occur are rarely, if ever, demonstrable at operation; collections of fluid in the tissues have been seen to occur distal to a stricture of the urethra[11]; stricture of the urethra is often absent (Table 1); a comparison of the urea content of the fluid in the tissues and of the bladder urine shows that the former is definitely not urine[5]; and injection of sterile urine into the tissues of experimental animals has failed to reproduce the syndrome of perineal phlegmon.[12, 13]

That the fluid in the tissues was definitely not urine, was easily proved in 3 of the 36 cases observed in this study. In these patients, the fluid in the subcutaneous tissues was watery, and contained aerobic and anaerobic bacteria, whereas the bladder urine was concentrated, clear and sterile.

A significant matter, which has not been stressed before, is the role of the lymphatic channels that drain the membranous and bulbous urethra, as well as the perineum, scrotum, penis and lower abdominal wall. These lymphatics, interestingly enough, follow accurately the outlines of Colles's fascia.[14–16] Individual variation in the course of the lymphatics, moreover, is not uncommon, and such variations may well account for the surprising spread of the phlegmon beyond the confines of Colles's fascia. Thus, in 2 of the cases in this series, the infection extended to the thighs, and in 5, a great deal of fluid was found in the prevesical space at cystotomy. Extension of the inflammatory reaction to the axillas and buttocks has been recorded in the literature.[2]

TABLE 1. *Incidences of Urethral Stricture and of Urinary Infection in Cases of Perineal Phlegmon.*

CONDITION OF URETHRA	PERCENTAGE OF CASES	BLADDER URINE AT OPERATION	PERCENTAGE OF CASES
Small-caliber stricture (impassable)	53	Infected	50
Large-caliber stricture (passable to No. 16 to 20 Fr. catheter)	22	Mildly infected (5 to 10 white blood cells per high-power field)	11
Normal lumen	25	Sterile	39

The clinical picture of perineal phlegmon is briefly as follows. The onset of the infection is often marked by chills and fever, followed by pain and swelling of the perineum and accompanied by increasing difficulty in voiding. In some cases, a long history suggestive of stricture of the urethra precedes the onset of the illness. The perineal swelling quickly spreads to include the scrotum, penis and abdominal wall. On examination, the patient is feverish and toxic, even comatose. The pulse is rapid and weak. The bladder is readily felt suprapubically, the hypogastric area is swollen, the penis and scrotum are often enormous, and the perineum bulges extensively.

The diagnosis of perineal phlegmon is readily made on the basis of the history and physical

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findings. In the differential diagnosis, periurethral abscess or an ischiorectal abscess pointing in the perineum must be excluded. The following cases illustrate some of the typical features of the condition.

Case Reports

Case 1. B. M., a 49-year-old Negro, entered the hospital because of swelling of the penis and scrotum of 24 hours' duration. He had had gonorrhea 13 years before entry; this had been treated by self-medication. Since then, symptoms suggestive of stricture of the urethra had been present. On the day before admission, the patient noted soreness in the perineum, followed by a local swelling, which rapidly extended to the scrotum and penis and was accompanied by retention of urine, fever and malaise.

On examination, the patient was feverish and in distress. The bladder was palpable at the level of the umbilicus. There was a swelling over the hypogastrium, and the penis and scrotum were enormously swollen, red and edematous.

At operation, an impassable obstruction was found in the urethra 8 cm. from the meatus. Through a median perineal incision, the subcutaneous tissues were found to be very edematous. The edema fluid was colorless and of fetid odor, and the culture yielded a beta-hemolytic streptococcus and *Staph. aureus*. The perineal incision was undermined and connected by rubber tissue, with counterincisions in the groins, scrotum and penis. The bulb and the urethra were explored, and were found to be intact but very cyanotic, with engorged veins on their surfaces. A perineal urethrotomy was performed. A No. 20 catheter passed easily into the bladder. Clear, amber-colored urine, which was later found to be sterile and pus free, was obtained from the bladder.

The postoperative course was very satisfactory. On the 26th day after operation, the urethra was readily dilated with bougies and sounds. The patient was discharged 5 weeks after admission; the wounds were healed, and he was able to void a good stream.

Case 2. W. M., a 67-year-old man, was admitted because of swelling of the genitalia and retention of urine. Two weeks before entry the patient noticed swelling of the penis and scrotum, in addition to inability to void. He had had gonorrhea many years previously, but had no symptoms of stricture of the urethra.

On admission, the patient was stuporous and very dehydrated. The bladder was palpable below the umbilicus. The suprapubic area was swollen, and the skin was red and blistered. The penis and scrotum were enlarged to three times their normal size. The perineum was bulging and red, and the inflammatory reaction extended over the buttocks.

The operative procedure was essentially the same as that in Case 1, except that the bladder was drained by cystotomy. The prevesical space was edematous. The bladder contained concentrated sterile urine. In the perineum, the subcutaneous tissues were gangrenous and bathed in foul pus, which on culture yielded an alpha-hemolytic streptococcus, *Staph. aureus* and an enterococcus. The urethra and the bulb were intact, but the urethral mucous membrane consisted of gray slough, so that the urethral lumen was obliterated. When an attempt was made to pass a bougie into the urethra, the instrument stuck in the meshes of the slough, which was of a gritty consistence. Postoperatively, sulfathiazole was used as an adjunct to combat the infection.

The convalescence was uneventful. It was remarkable that the urethral lumen became re-established at the time of the patient's discharge from the hospital.

Case 3. J. M., a 51-year-old man, was extremely toxic and comatose at the time of entry. He was said to have had swelling of the genitalia and difficulty in voiding for the previous 2 weeks.

The temperature was 104°F., and the pulse 120, weak and thready. The bladder was not palpable. The hypogastrium was swollen, red and blistered, and red streaks extended to the upper abdomen and over the thighs. The genitalia were greatly swollen; the perineum bulged, and the buttocks were red, blistered and indurated.

The operative procedure was the same as that in Cases 1 and 2. The subcutaneous tissues were edematous and sloughing. On culture, an alpha hemolytic streptococcus and a fusiform bacillus were found. The urethra and the bulb were intact, but the urethral mucous membrane was black and sloughing, obliterating the urethral lumen, in a manner similar to that in Case 2. The bladder contained about 180 cc. of uninfected, concentrated urine.

Postoperatively, and without regaining consciousness, the patient developed signs of bronchopneumonia and died 2 days later.

Discussion

These case reports bring out a few points that merit emphasis. Colles's fascia was no barrier to the spread of the pathologic process. Moreover, the urine in each case was concentrated and sterile, yet the fluid in the subcutaneous tissues was watery and foul and harbored various aerobic and anaerobic bacteria. Laceration of the urethra was not demonstrable. Finally, the urethral mucous membrane in Cases 2 and 3 was gangrenous and sloughing, and thus produced an obliterated lumen. The passage of an instrument through such a urethra could easily give the erroneous impression that a stricture existed.

Table 2. *Analysis of Cases of Perineal Phlegmon, Showing Mortality, Morbidity and Age Distribution.*

Mortality	37 per cent
Morbidity	
Average hospital stay	44 days
Longest hospital stay	94 days
Shortest hospital stay	12 days
Age	
Average	55 years
Oldest	77 years
Youngest	26 years

The prognosis of perineal phlegmon is grave. The morbidity is high, and the mortality has remained at about 40 per cent (Table 2).[17] The high mortality is partly due to the age and the debility of the patient with this lesion, and partly to the high virulence of the infection in certain patients. Although delay in making a diagnosis and beginning treatment obviously adds to the seriousness of the outcome, prompt action does not always prevent death (Table 3). Of 11 patients in the same age group, who were treated

in a similar manner during the first three days of the disease, 6 survived and 5 died.

The management of perineal phlegmon is based on three principles: treatment of the infection; relief of the retention of urine; and treatment of the urethral stricture.

Prompt and adequate surgical drainage, with thorough decompression of the distended tissues, is the paramount factor. This can be accomplished by long, free incisions, or by multiple incisions, widely undermined, and connected by rubber tissue. I prefer the latter method, because, if it is properly executed, satisfactory drainage and decompression result and healing is more rapid, with less scarring and deformity.

TABLE 3. *Relation between Preoperative Duration of Perineal Phlegmon and Postoperative Mortality.*

DURATION OF ILLNESS	NO. OF SURVIVALS	NO. OF DEATHS
days		
1–2	6	5
3–6	7	2
7–14	3	2

Chemotherapy, based on accurate bacteriologic and renal-function studies, is a valuable therapeutic adjunct. Zinc peroxide dressings, the local application of sulfanilamide powder and irrigation of the wounds with Dakin's solution are also useful.

The retention of urine is best relieved by cystotomy, particularly if dense strictures of the urethra are present or if the urethral mucous membrane is gangrenous and sloughing. It is amazing how rapidly such a urethra regenerates if it is not unduly traumatized. Bladder drainage may be established by perineal urethrotomy if the urethra is strictured and no slough is present or by penile catheter if the urethra is intact. The stricture of the urethra can be dilated or incised, if the patient's condition permits, or treatment can be postponed till a later date.

SUMMARY AND CONCLUSIONS

The literature on perineal phlegmon is reviewed, and an analysis of 36 cases is presented. Three cases are described in detail.

Perineal phlegmon is an infectious process and is not due to "extravasation of urine" into the tissues confined by Colles's fascia. The anatomic attachments of this fascia do not prevent the spread of the infection.

Stricture of the urethra and pyuria are often absent. A sloughing urethral mucous membrane, moreover, may mislead one into believing that stricture exists.

Smears and culture of the pus in the subcutaneous tissues, as well as blood cultures and renal-function studies, are necessary for successful chemotherapy and for a better understanding of the pathology of this disease.

Adequate surgical drainage, with decompression of the distended tissues, is imperative. Depending on the condition of the urethra, the retention of urine can be relieved by penile catheter, by perineal urethrotomy or by cystotomy.

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CLINICAL NOTE

SHAKING CHILLS IN TYPHOID FEVER*

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THE purpose of this report is to emphasize and to bring to the attention of clinicians the not uncommon presence of shaking chills in typhoid fever, either at the onset or during the course of the illness. The impression seems fairly well established in the minds of many physicians not only that chills are extremely rare but also that their presence in a given case militates against the diagnosis of typhoid fever. This concept is also found in many of the textbooks of medicine, whereas in others a very casual attitude is assumed concerning either the presence or absence of chills. The earlier writers on typhoid fever were well aware of the occurrence of chills, and one could not improve on a few excerpts taken from their writings. In an analysis of 303 cases of typhoid fever at the Massachusetts General Hospital from 1821 to 1835, Jackson[1] commented as follows:

> In a very large proportion of cases chills occurred either at the commencement or late in the disease, or both. . . . It may not be useless, however, to say, that I do not find chills at an advanced, or late period of the disease, to have been usually followed by very grave consequences, though I had previously had a different impression on this point. They are noted in 29 cases, and only two of these were fatal in their termination.

Osler,[2] in his *Studies in Typhoid Fever*, prepared at the Johns Hopkins Hospital and published in 1895, also recognized chills as part of the symptomatology of the disease:

> In the systematic writers on typhoid fever scarcely a reference is found to chills, except as a symptom of the onset of the disease. Now and again in the journals a case is reported in which chills have been a special feature, and the complication is spoken of as a manifestation of ague . . . he [Peabody] had also seen "severe chills followed by elevation of temperature as a symptom of typhoid fever, which did not affect the subsequent course of the disease. . . ."

In the same report, Osler classified chills in typhoid fever, and his classification and comments are worth repeating. Six categories were listed:

Chills at the onset of the disease. Seventy-nine cases were studied, 13 of which began with shaking chills. In 2, there were several severe rigors. Three patients had two chills, whereas the remaining 8 had single rigors.

Chills at the onset of the relapse. Two cases were described, the relapse in one having occurred on the sixty-fourth day of the illness, and having been marked by several severe chills. In the other, the relapse was ushered in by a severe single chill.

Chills as a result of treatment. Osler considered therapy to be the commonest cause of chills in typhoid fever, especially that following the use of antipyretics. A dose of 5 or 10 gr. of antipyrine was sufficient to induce a chill in many patients. This observation was also noted by Janeway, whom Osler[2] quoted as follows:

> If we give the modern antipyretics in large doses chills will occur, which are due simply to the fact that the temperature has been depressed, and then it rises and this rise is accompanied by mild and sometimes by severe chills. Drop your antipyretics, and the chills disappear.

Chills with the onset of complications. A rigor may precede the development of any of the complications of typhoid fever. Among these, Osler listed pneumonia, pleurisy, acute otitis media, suppuration in the mesenteric veins, pyemic abscesses of the kidneys, perforation of the ileum or appendix, and acute periostitis. Chills were also noted in some cases of thrombosis of the femoral or saphenous veins. In rare cases, they preceded the development of acute and fatal hyperpyrexia. On the whole, however, rigors were rarely present in the complications of typhoid fever.

Chills (? septic) during convalescence in severe and protracted cases. In a few cases, rigors were noted throughout the course of the fever, without any localizing symptoms or signs to account for them. Two cases were described in which severe chills occurred in the absence of any recognized complication. Both patients recovered.

Chills due to concurrent malaria. Osler considered this a very rare cause of chills in typhoid fever.

TABLE 1. *Onset and Frequency of Chills in Patients with Typhoid Fever.*

CASE NO.	AGE	SEX	OCCURRENCE OF CHILLS	NO. OF CHILLS	COMMENT
	yr.				
1	21	F	First week	Single	
2	36	M	First week	Single	
3	22	F	First week	Two	Each chill followed the administration of 10 gr. of acetylsalicylic acid.
4	31	F	First and second weeks	Repeated	
5	35	M	First and second weeks	Repeated	
6	22	F	First, second and third weeks	Repeated	During the third week, the patient complained of pain in the right flank; there was dullness at the right base, and basal rales were heard bilaterally.
7	17	F	First and third weeks	Repeated	
8	39	F	Fourth week	Repeated	

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The significance of chills in typhoid fever was recently illustrated by a private patient who had repeated shaking chills during the first two weeks of his illness. We then became interested in the incidence of this symptom among patients with typhoid fever at the Boston City Hospital. A review of the cases from 1937 to 1939 inclusive showed that 7 of the 16 patients had had one or more frank chills, an incidence in this small series of 44 per cent. The time of onset and the frequency of the chills in these 7 cases, as well as in the 1 in private practice, are shown in Table 1.

It will be seen that 2 patients had a single chill at the onset of their illness. In 1 case, chills were directly attributable to medication. In 1 case, repeated rigors were experienced during the first two weeks, and these continued throughout the third week, during which, however, evidences of complications were present. In the remaining 4 cases, repeated chills were noted, extending from the first to the fourth week after the onset of the disease. It is interesting to note that in Case 5, in which the patient had repeated rigors during the first two weeks of his illness, signs of pneumonitis at the left base, by both physical and x-ray examinations, developed in the third week, during which chills were entirely absent. It may be pointed out that the cases presented can readily be catalogued according to Osler's classification.

Conclusions

In the study of any disease, it is essential to appreciate not only the common symptoms but also those that occur less frequently. This is particularly so in illnesses, like typhoid fever, which require isolation and special precautions. It is for this reason that we have considered it useful to discuss the occurrence in typhoid fever of shaking chills, as distinct from mere chilly sensations, either at the onset or during the course of the disease, and to correct an unjustified impression that seems prevalent among members of the medical profession.

In conclusion, one may quote from McCrae,[3] who, in his chapter on typhoid fever, stated:

> . . . . For the student it is most essential to realize that the classical description of the disease does not fit every patient and this makes it so important that the disease should be studied from the patient and not from text-books alone. No symptom or sign is necessarily present, a point never learned by some men who refuse to make the diagnosis of typhoid fever unless certain classical features are found.

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MEDICAL PROGRESS

PSYCHIATRY: THE NEUROSES IN WAR

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In considering the war neuroses, or what were labeled "shell shock" in the last war, the types and patterns of reaction do not differ from those encountered in peacetime, except in the precipitating factors. Of course, in war, more cases of such profound reactions as panic are seen. The experience of World War I gradually made it clear that emotional factors, fear of death, fear of and feelings of guilt about killing, conflict between duty and self-preservation, and so forth precipitated nervous disorders in soldiers, and that there was no tenable basis for considering physical injury to the nervous system, caused by shell explosions, responsible for the disorders.

Since, however, only certain men broke down nervously under the strain of war, there was a tendency in some quarters to regard the neurotic reactions as deriving essentially from cowardice, and consequently such reactions were sometimes treated summarily as weaknesses, requiring disciplinary action or at least disapproval. Considering the contagiousness of anxiety and hysteric reactions, when the general morale in a group is low, or when suggestibility runs high, there may well have been some justification and necessity for attempting to counteract them by disciplinary measures, particularly in acute situations that affected a group of men. There would be no more reason to treat the individual soldier by scolding and punishment than so to treat a civilian suffering with a neurotic disturbance.

Reprints of articles in this series are not available for distribution, but the articles will be published in book form. The current volume is *Medical Progress: Annual, 1940* (Springfield, Illinois: Charles C Thomas Company, 1941. $4.00).

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Yet, even in the present war, the psychiatric point of view is not always the guiding principle. Bowlby and Soddy,[1] in a letter written to the *Lancet*, relate their experiences as psychiatrists in a war-neurosis center, where they were supposed to treat the victims of the Dunkirk evacuation. They complain that they were not free to practice psychotherapy because the director of the center held that the men were not mentally ill but needed discipline and "somewhat forceful encouragement." This attitude is not the prevailing one, however, in the English hospitals, as attested by the numerous papers on psychiatric treatment. The matter is mentioned simply because in time of war, more than ever, efficiency, stamina, reliability, hardiness and perseverance are essential, and it is quite understandable that some of those who themselves may have these qualities and who see the imperative need of them may get "fed up" with being tolerant of or sympathetic with reactions that certainly spell weakness in relation to the job that must be done.

Etiology and Prophylaxis

The etiology of the neuroses in war is important, for it is related to the question of prophylaxis, especially as applied to the establishment of an armed force of emotionally or nervously stable men. Statistical data on neuropsychiatric disorders that developed in the United States Army during World War I show that in a large percentage of such disorders there had been a history of nervous or mental instability or neurologic defect long before the men affected entered military service.[2]

Much has been written to support the theory that evidence of personal predisposition and a family history of nervous instability are predominantly found in men who become the nervous invalids in military life. On the other hand, it is claimed that the heredity factor in the mass of neuroses and psychoses is but slightly more than that for healthy individuals.[3] Concerning predisposition, Wittkower and Spillane[4] write, "A majority of psychiatric authors believe that, given sufficient emotional stress, neurotic symptoms may appear in anyone, and that the existence of neurotic symptoms in civil life predisposes to their reappearance in an increased and altered form in war. . . ."

Kardiner[5] boldly states that psychoneurosis of the usual type, hysteria or compulsion neurosis is decidedly not a contraindication to military service. He rules out "positively only men with a history of convulsions, tiqueurs, stammerers and men who have shown persistent disturbances of the autonomic nervous system over a long period," and adds that "these, however, can be inducted and assigned to noncombatant duties." He makes the well-known observation that many persons who were severely neurotic and maladjusted in premilitary life adjusted themselves well to the military routine and lost their neurotic symptoms — "for the time being, at any rate." But it is also known that many men with histories of neurotic tendencies did not make good soldiers, and thousands of them, together with the men who temporarily lost their symptoms and who regained them later, have been supported by the Government ever since.

Thus, it is very much of a problem, and one that has no satisfactory solution, to decide who should be excluded from military service on neuropsychiatric grounds. However, there is fairly general agreement that a history of psychotic episodes, long-standing and disabling neurotic reactions, drug addiction, chronic alcoholism and severe mental defect should debar a man from induction. Just what degree of mental defect will be the line between induction and rejection is not clearly defined, and seems to depend on the judgment of the particular induction board.

Since it is impossible to predict accurately what man with a neurotic background will break down under the stress and strain of service, it is often said that the neurotic person should not be rejected from service but should be placed in the proper type of service for his particular qualifications and limitations. How such an equitable and ideal distribution could be worked out has not yet been settled. However, Sutherland,[6] in England, writes: "A new scheme has been developed whereby it will be possible to have psychoneurotic soldiers placed in work suited to them and, if necessary, near their homes. This highly commendable innovation will be followed with much interest." So far, the United States Army has made no provision for using the man who is rejected for neuropsychiatric disability.

Numerous psychiatrists are skeptical of the wisdom of returning a man who has broken down to active service when he becomes symptom free. Too often, these men have broken down again.[7, 8]

Types of Reaction

The reaction patterns seen more frequently in the present war, as in the last, are anxiety, depression and hysteria. Following the evacuation of Dunkirk, many acute neuroses, typified by marked exhaustion, extreme anxiety or panic, developed. Many of the men affected had definite previous histories of nervous stability. This suggests that men of fairly sound personality may suffer neurotic breaks if the strain is severe enough.

A description of the acute war neurosis is given by Sargant and Slater[9]:

> The clinical picture was surprisingly uniform. There were first the signs of physical exhaustion — thin, fallen-in faces, pallid or sallow complexions. The expression and the whole attitude of the body was one either of tension and anxiety, or of a listless apathy. Neurological signs of a functional nature were usually present. A coarse irregular tremor of the hands was exceedingly common; in some cases it resembled the tremor of extrapyramidal lesions, and in one it presented the typical pill-rolling form seen in chronic encephalitis. . . . The resemblance to a parkinsonian picture was often increased by an immobile facies, and the superficial resemblance was so great that a number of cases had been sent here under a diagnosis of parkinsonism — i.e., they had been thought to be organic. . . . Reflexes were usually exaggerated, occasionally sluggish.

The mental symptoms were those associated with acute anxiety, including sleeplessness, terrifying dreams, a feeling of inner unrest and a tendency to be startled by the slightest noise. Amnesia, especially for the worst part of the past experiences, occurred in some cases, and additional hysteric symptoms in others.

In the present war, as in 1914–18, the incidence of psychotic developments is much smaller than that of the neurotic reactions.

Psychopathology

Although the literature on psychiatric subjects published to date relating to the present war is not extensive, some of the papers have included interpretations of the psychopathology of the war neuroses. It seems unnecessary to look very deeply into mental mechanisms to find a satisfactory explanation of the breakdowns that occur, since it is only reasonable that a certain number of soldiers will collapse nervously under the strain and terrors of war. Why one man, and not another, goes to pieces brings up the whole question of what constitutes nervous, emotional or psychobiologic stability. In war situations, the fundamental conflict is surely between the drive for preservation of self and the impossibility of honorable escape, or of escape at all. Of course, many other factors operate psychologically for the individual person.

Sutherland[6] notes "fear of death and an impotent rage against what were felt to be overwhelming odds," and adds, "This rage was often excited to a paralyzing degree by the slaughter of women and children or by the loss of friends."

The same writer, who considers a principal feature of the deeper psychology to be a basically insecure attitude toward the outside world, observes: "This attitude was manifested in many ways, particularly in the excessive dependence upon those figures with whom security was felt — namely, their families. It was as though these men had always unconsciously dreaded the assertion of their independence as a dangerous aggressive process." Sutherland believes that the significance of the so-called "separation anxiety" — from home and family — cannot be minimized.

Slater et al.[7] write, "The experiences of war provide a stimulus to aggressive and sadistic impulses, with the consequence that guilt and its associated depressive affect are very common; or projection mechanisms may come into play, the man believing that every 'plane is coming specially to punish him.' "

The relation between aggressiveness and anxiety is also commented on by Wittkower and Spillane[10]:

> During war . . . not only was the general taboo on aggressiveness and violence diminished but they were forced by military service into situations which inevitably stimulated their aggressiveness and hence provoked anxiety. This anxiety is a signal of a threatened breakdown of defences against aggressive impulses. If further stimulation of aggressive impulses took place, a complete breakdown ensued.

The same authors describe a psychoanalytic portrayal of the type of personality subject to developing neurosis in war, as follows:

> . . . a basic personality structure characterized by self-centredness, over-conscientiousness, lack of sociability and lack of affection for relatives and friends. Such individuals suffer from the feeling that their personality has been neglected and that their importance is not sufficiently recognised. Many of these men were unable to carry out their tasks in practical life; others, capable of doing this, showed little initiative, however, or energy. . . . This group often showed an effeminate disposition, were dependent on their wives and frequently weakly potent. Life in the trenches exposed them to a danger of death which constituted a threat to their excessive self-love. Community life ran counter to their asocial tendencies, and the unconditional demand for self-sacrifice in war called for a renunciation of narcissistic privileges. More so than others, individuals of this type were prone to conflicts about aggressiveness, and, through their latent homosexual tendencies, the exclusive association with men constituted a special stress. Under such stresses these individuals increasingly regressed to a narcissistic level of development, leading to a state of infantile helplessness, with a complete surrender to their suffering, and a need to be pampered, cared-for and petted like children. The withdrawal of object libido (diminished capacity for external interests and emotional ties) results in an inflation of ego libido (self-centredness), which is expressed in abnormal hypochondriacal sensations and a further diminution of genital potency.

Miller[11] says that a person of the narcissistic type is terrified at the prospect of a wound, that he is likely to develop hysteric manifestations, fugues

and, sometimes, major mental disorders: "They cannot face the horrors of war, not because their bowels yearn for the slain, but because they identify themselves with every mutilation and death which the soldier has to witness."

The drastic changes effected in a man's life by being taken away from the accustomed routine of home and civic life, the necessity for adjusting to discipline and comradeship not of his own choosing, and inadequacies of personality in successfully meeting the required adjustments constitute enough strain in themselves to induce neurotic reactions in some men. Add to these or, if these difficulties are not present in a very plastic person, introduce an intermittent and recurring threat of death or injury, and it will require hardiness of personality structure, an idealism or philosophy that makes one's own life unimportant or a strong masochistic or sadistic tendency to bring the soldier through without the development of neurotic symptoms.

The appearance of anxiety symptoms in the presence of such a situation as the Dunkirk evacuation does not, of course, necessarily presage the beginning of a neurotic break. Many men recovered completely from such symptoms after a few days of rest, quiet and adequate food.

Treatment

Psychiatrists generally agree, from experience in both the last and the present war, that quick, immediate treatment is imperative. If treatment is delayed, the symptoms and neurotic patterns tend to become set. Slater et al.[7] state, "Treatment of an acute neurosis is almost as urgent as that of the acute abdomen." Writing of cases that had become chronic, they remark:

> Conversion symptoms had been allowed to persist, and large periods of amnesia had been left untouched. By the time they arrived for treatment here the neurotic reaction had become fixed. . . . It is of the utmost importance that the acute neurotic should receive effective first-aid as soon as he is seen.

If the patient shows evidence of marked fatigue or exhaustion, physical care is the first requisite. Such care should include rest, complete rest in bed, if necessary; sleep, with the aid of sedatives, if necessary; narcosis for several days, if the degree of anxiety requires it; and a full diet and large quantities of fluids. As pointed out by Sargant and Slater,[9] the narcosis has to be arranged, of course, so that the patient can receive adequate diet and fluids.

If hysteric symptoms or amnesias are present, they should receive consideration. In some cases, a thorough history taking, accompanied by persuasion or suggestion, is enough to effect relief. Abreaction is recommended if any areas of amnesia remain. Hypnosis may be used. In some cases, the use of a narcotic intravenously has been substituted, and successfully, for hypnosis. Stungo[12] uses a 10 per cent solution of Evipan Sodium, and Slater et al.[7] have used sodium amytal.

Modified insulin therapy has been found to be of value in some cases of anxiety, hysteria and moderate depression, especially when there has been a loss of weight and physical depletion in general. Sargant and Craske[13] describe the technic, whose purpose is to induce light coma with insulin and to give heavy feedings with sugar and potatoes. The writers do not claim great success, but state:

> Rapid gains in weight and improvement in appetite may often be obtained in neurotic subjects whose general physique has deteriorated under stress. Generalized neurotic anxiety, and hysterical and depressive symptoms in a reactive setting sometimes improve rapidly. The improvement is mainly in the associated symptoms of nervous exhaustion.

They point out, wisely, that a stable psychologic recovery may well depend on restoration of normal physique.

In some of the war neuroses, there must be an inclination, whether or not entirely conscious, to cling to symptoms to prevent a return to duty. Slater et al.[7] suggest:

> . . . the desire of the patient to evade further military service can be used to aid recovery rather than to perpetuate illness; he can be told, for instance, that he will be recommended for discharge, but only when he has recovered from his symptoms. A healthy civilian is of more value to the country than a sick soldier.

McLaughlin and Millar[14] describe the effective use of air-raid noises in psychotherapy. At first, rather crude apparatus was used to simulate the sounds of planes, dive-bombing, machine-gun firing and so forth. Then with the help of the British Broadcasting Corporation, gramophone records of actual warfare were produced:

> Though the procedure was intended to be a means of "conditioning" cases to noxious sounds, it soon became evident that it could be used as a speedy and practical method of abreacting patients. The process of letting a patient re-live terrifying emotional experiences has a therapeutic effect. As a measure for producing abreaction the employment of war noises is much simpler than hypnosis or hypnonarcosis. It is quick, effective, and does not demand too great technical skill. The patient is enabled to recall terrifying incidents which had determined his symptoms, and by expressing them in the secure atmosphere of the hospital his self-control and confidence are helped.

McLaughlin and Millar report that a number of cases were helped by this method.

Civilian Reactions

Reports on civilian reactions to air raids and bombing in England indicate that genuine air-raid casualties have been much lower than might have been expected. The general opinion seems to be that bombing has precipitated breakdowns in persons who have been predisposed to nervous instability.

Atkin,[15] in writing of 300 consecutive admissions to a mental hospital, says that air raids were regarded as having a major influence in only 4 cases and were contributory in only 6. He contends that to assert a causal connection between an air raid and the development of symptoms is "as logical as to maintain that horses are a cause of phobia for these animals or that open spaces are the cause of agoraphobia. It is a common and well-known mechanism for anxiety or fear to be displaced from some repressed object or situation to any convenient symbol at hand."

Brown[16] writes:

> The swarms of hysterics which were by some expected to follow bombing have not appeared, but nevertheless there are certain psychiatric disorders attributable to air raids. The symptoms in mild cases of shock are tremor, sometimes violent, dilated pupils, and tachycardia, with an emotional state of fear, perhaps mixed with anxiety about relatives and property. There is usually extreme sensitivity to noise and considerable restlessness. . . . Some cases . . . are in a limp semi-stuporous state, usually with a tremor. These patients are acutely scared and seem to be groping for hysterical symptoms to give them peace of mind and forgetfulness of the incident.

Brown has rarely found definite psychoneuroses in patients who previously had no neurotic traits, and in rare cases, the form has usually been some type of hysteric reaction.

Certain patients with long-established neuroses, such as obsessional states and complex-determined anxiety, have been little affected by bombing. Brown quotes one patient as saying, "Oh, I'm not worried about the bombs — it's this queer tickly feeling in the back of my head." A woman with obsessional fears of murder and suicide and knives said, "I'm afraid I can't get very concerned about bombs; I wish I could — it would be more normal." Brown gives a reasonable interpretation of such reactions:

> The extraordinary toughness of some well-established psychoneurotics to aerial bombardment may be due to the fact that they are to some extent reassured by seeing other people being as worried as they have felt for years. Another reason may be that the whole of their emotional tone and affect is concerned with their own problems, usually related to sexual difficulties, and there is no affect left for simple bodily fear. In some cases the urgency of the moment does serve to inhibit the patient's long-standing emotional conflicts, with resultant clinical improvement. In the Russian revolution it was said that the obsessional psychoneurosis became extinct. . . .

Psychoses may be precipitated by bombing, and air raids have apparently induced episodes of depression or mania in persons who were known to be subject to the manic-depressive psychosis.[17] Patients who have long been sick with psychoses, however, are not likely to be affected by air raids. Treatment of the civilian casualties is much the same as that for the men in service.

330 Dartmouth Street

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor*

CASE 28081

PRESENTATION OF CASE

A twenty-three-year-old post-office clerk was admitted to the hospital because of intermittent pallor and weakness.

About eighteen months before entry, the patient became aware of pallor and slight general weakness. A local physician found the hemoglobin to be 35 per cent, and prescribed iron and liver-extract proprietaries. The patient improved for three or four months, and then relapsed soon after the discontinuance of the medicine. Another iron preparation was given by mouth, accompanied by injections of liver. At this time, the patient experienced a small amount of pain in the right side of his abdomen, occurring two to three hours after meals and relieved somewhat by defecation. About a year before entry, he consulted another clinic. Physical examination then revealed only pallor. Examination of the blood showed a red-cell count of 4,460,000 with 61 per cent hemoglobin, and a white-cell count of 7300. The red cells were hypochromic. The stools gave a strongly positive guaiac reaction on several examinations. Sigmoidoscopy and gastric analysis were both negative. Routine roentgen-ray examination of the gastrointestinal tract was negative; however, serial films with use of the Miller–Abbott technic finally showed a questionable polyp-like lesion near the cecum. When treatment was again stopped, the patient's hemoglobin fell to 48 per cent, rising again to 85 per cent with a red-cell count of 4,800,000 when iron therapy was reinstituted. The patient entered this hospital for an exploratory laparotomy.

On admission, the patient appeared husky, suntanned and well. There was a faint, blowing pulmonary systolic murmur. The heart, lungs and abdomen were otherwise normal.

The temperature, pulse and respirations were normal. The blood pressure was 114 systolic, 72 diastolic.

Examination of the blood showed a red-cell count of 5,450,000 with 15.5 gm. hemoglobin, and a white-cell count of 11,200 with 94 per cent polymorphonuclears. The blood Hinton reaction was negative. The urine was normal.

On the fifth hospital day, an operation was performed.

DIFFERENTIAL DIAGNOSIS

DR. THOMAS V. URMY: It seems safe to assume that the symptoms of pallor and general weakness that originally took this patient to his physician were due to anemia, and that the anemia was in turn due to blood loss from some lesion of the gastrointestinal tract. However, there is very little additional positive evidence to assist us in determining the type and exact location of the disease. It is known only that he had for a time, midway in the course of his illness, mild right-sided abdominal pain coming on two or three hours after meals and somewhat relieved by defecation. To this is added the information that serial films with the use of the Miller–Abbott technic about a year before the operation showed a questionable polyp-like lesion near the cecum, that is, I presume, in the lower ileum. The patient apparently had no sudden episodes of weakness or faintness followed by the passage of tarry stools. There was evidently no real intestinal colic, no diarrhea or constipation, and no epigastric pain, nausea, vomiting, heartburn or gas. When the blood count and hemoglobin were restored, his general health was apparently excellent. Physical examination revealed no mass or enlarged spleen or other sign to clarify the diagnosis.

Many gastrointestinal lesions may give rise to hemorrhage of considerable magnitude. In the upper portion of the tract, it might be esophageal varices, hiatus hernia, gastric or duodenal ulcer, gastritis, cancer of the stomach, or gastric leiomyoma or leiomyosarcoma. In the small intestine, one might encounter a malignant tumor such as lymphoma or cancer or a benign tumor such as lipoma, hemangioma, adenomatous polyp or leiomyoma; or an ulcer in a Meckel's diverticulum or, rarely, a simple ulcer of the ileum or jejunum. Very rarely, regional enteritis may cause massive bleeding. In the colon, extensive hemorrhage may come from ulcerative colitis, ulcerated polyp or cancer, particularly cancer of the cecum.

Many of these possibilities can be eliminated fairly readily. Barium studies did not reveal esophageal varices; and this, with the absence of an enlarged spleen or evidence of liver disease, seems definitely to rule them out. Hiatus hernia also may safely be eliminated in view of the negative x-ray examinations. Bleeding from gastritis must remain a possibility, although the absence of gastric symptoms is against it. The negative x-ray studies, the age of the patient, and the absence of pain and other local and general symptoms seem

to eliminate gastric carcinoma. The negative x-ray films should also in most cases eliminate leiomyoma of the stomach. On the other hand, a silent gastric or duodenal ulcer of the posterior wall could account for extensive, repeated hemorrhages, and could be missed on x-ray examination. It cannot be eliminated, although hemorrhages from ulcer, especially of the duodenum, are usually abrupt and extensive and marked by sudden spells of weakness and fainting, which this patient evidently did not have. Also, as a rule, upper-gastrointestinal-tract hemorrhages result in the vomiting of blood, as well as its passage by rectum.

It is much more difficult to eliminate all the possible lesions in the small intestines, since the x-ray report is not so helpful in this part of the gastrointestinal tract. It can, however, be counted on to eliminate regional enteritis, which would also be very unlikely in the absence of more marked pain and alteration in bowel motility. Actually, such lesions rarely bleed extensively. Meckel's diverticulum is marked as a rule by more pain and obstructive symptoms than this patient had. However, occasionally, silent bleeding from an ulcer in a Meckel's diverticulum does occur, and it is notoriously difficult to demonstrate these diverticulums by x-ray study. They are commoner in the male sex, and although bleeding as a rule manifests itself earlier than the age of twenty-one or twenty-two there have been many cases reported at about this age or later. Leiomyomas may also cause bleeding for many years without becoming large enough to produce obstructive symptoms. The same possibility exists in cases of adenoma, lipoma and hemangioma. Regarding carcinoma, one believes that after at least a year and a half of bleeding there should be some obstructive symptoms or other evidences of local extension or metastases. Moreover, I should not expect ulceration and bleeding of a malignant lymphoma without obstructive symptoms or a palpable mass. This patient's history is entirely too long and uneventful.

Cancer of the colon is unlikely for these same reasons. Benign polyp in the cecum ought to show by x-ray examination. In the lower half of the colon, an ulcerated cancer or polyp would almost surely result in the passage of bright blood and mucus or some alteration in bowel habit, and x-ray signs. Finally, so far as cancer is concerned, I do not believe that its accompanying anemia can be completely relieved even temporarily, as this patient's was. Colitis as a cause of the anemia need not be seriously considered in the absence of other symptoms, including diarrhea, cramps and the passage of pus and gross blood.

In summary, then, I think that although one cannot completely eliminate gastritis, duodenal ulcer and gastric ulcer, a lesion of the jejunum or ileum seems more likely. The x-ray findings suggesting a polyp in the ileum, as well as the story of right-sided pain, somewhat encourage me in this assumption. The diagnosis, I believe, lies between a benign tumor and a Meckel's diverticulum, but it is difficult to choose which. The mild abdominal pain, which appeared and disappeared in the middle of the course, perhaps favors somewhat a diverticulum, since if it represented mild obstruction by a tumor one might expect it to have become more prominent rather than disappear with the passage of time. On the other hand, the x-ray findings certainly favor a polypoid tumor. I am inclined toward an ulcer of Meckel's diverticulum first and the benign tumor second. If the lesion was the latter, I believe that the order of likelihood is leiomyoma, adenoma, lipoma and hemangioma.

DR. TRACY B. MALLORY: The preoperative diagnoses on the wards were question of Meckel's diverticulum, question of tumor of the ileum and question of regional enteritis. Would anyone like to state a preference? (Profound silence.)

DR. WILLIAM B. BREED: Was this condition demonstrated by x-ray study reasonably well?

DR. MALLORY: We have no films; they were taken at another hospital.

CLINICAL DIAGNOSIS

Meckel's diverticulum?
Tumor of ileum?
Regional enteritis?

DR. URMY'S DIAGNOSIS

Ulcer of Meckel's diverticulum.

ANATOMICAL DIAGNOSES

Regional enteritis.
Meckel's diverticulum.

PATHOLOGICAL DISCUSSION

DR. MALLORY: At operation, a Meckel's diverticulum was found, but also 30 cm. of thickened intestine characteristic of regional enteritis was present. The Meckel's diverticulum itself was slightly involved by the enteritic process, but there was no ulcer within the diverticulum, whereas there were many in the ileum, so that the bleeding most certainly came from the enteritis. A resection of the involved intestine and the Meckel's diverticulum was carried out, and the patient had a good convalescence.

DR. URMY: Have you ever seen another case like this?

DR. MALLORY: No; Dr. Leland S. McKittrick also made a note in the record stating that he had never seen a case of regional enteritis in which anemia was the presenting symptom.

CASE 28082

PRESENTATION OF CASE

A sixty-year-old housewife was transferred from the Eye Service to the Surgical Service of the hospital because of vomiting of two days' duration.

Sixteen months before entry, the patient was operated on in another hospital, with removal of a cystic ovary and the right tube, and a biopsy of the cervix uteri was said to have shown an epidermoid carcinoma, Grade III. Two months later, she was seen in a second hospital, where the diagnosis was confirmed. In addition, she was found to have slight right hydronephrosis. Roentgen-ray therapy was instituted, and was followed by regression of the cervical lesion. Occasional cervical discharges remained, for which the patient took douches. The hydronephrosis cleared. There were no further pelvic symptoms.

Five months before entry, the patient had a cataract extracted from her right eye. Subsequently, there was failure of vision in the left eye, with physical signs of cataract. One week before transfer to the Surgical Service, she entered the Eye Service of the hospital for an extraction. Operation was postponed, however, because the temperature was elevated to 99.5°F. for five days. The patient began to complain of loss of appetite and general malaise. Two days before transfer, she began to vomit and felt nauseated, but had no pain. At the same time, bowel movements stopped.

On transfer, the patient appeared obese, dehydrated and irritable. The heart and lungs were normal. The abdomen was free from tenderness, spasm and palpable masses. Sounds of peristalsis were diminished and distant. The healed scar of a previous laparotomy lay in the midline above the pubis. Pelvic examination showed obliteration of the upper vagina. The cervix could not be made out, nor could the fundus be felt. The rectum was free from blood or palpable masses.

The temperature was 99.2°F., the pulse 130, and the respirations 20. The blood pressure was 120 systolic, 80 diastolic.

Examination of the blood showed a red-cell count of 5,300,000 and a white-cell count of 17,700 with 85 per cent polymorphonuclears. The urine showed a + test for albumin and a trace of sugar.

A flat roentgenogram of the abdomen showed dilatation of the stomach, but no apparent distention of the bowel.

A stomach tube was passed, and the patient was placed on continuous suction. Intravenous glucose and saline were given. On the next day, the patient was cyanotic, with deep, rapid respirations and cold clammy skin. The temperature was 98°F., and the pulse 140. Rales were heard at both pulmonary bases. A roentgenogram of the chest showed apparent atelectasis at the left base, with the diaphragm high on each side. About 250 cc. of bright-red blood was passed incontinently by rectum. Sulfapyridine was started, and the patient was put in an oxygen tent. She vomited thin coffee-grounds material and pulled out the suction tube. Death occurred by respiratory failure a few hours later.

DIFFERENTIAL DIAGNOSIS

DR. LANGDON PARSONS: I should like information about many things in this case, including the diagnosis. I think I could understand a little bit more about it if I could figure out exactly why the patient died. It is obvious that she had some lesion of the bowel, but by no means certain that this was the direct cause of death. There seem to be a number of possibilities to account for the latter.

For example, this patient may have died of general peritonitis secondary to radiation necrosis of the bowel or to actual bowel involvement by uncontrolled carcinoma; the peritonitis may have been local owing to the same causes, with a complicating pneumonia to explain the terminal issue; the patient may have died of embolism, with the element of radiation necrosis as a complete red herring — knowing the type of case often selected by Dr. Mallory, I believe that this is a distinct possibility; the patient had mild diabetes, which with the combination of sepsis and pneumonia might conceivably have caused death, but I doubt if the diabetes entered into the picture to any extent.

There are definite objections to the diagnosis of peritonitis, for although the pulse, temperature and white-cell count were elevated and signs of ileus were present, the abdomen is said to have been free of spasm or tenderness. A smoldering process had obviously been present with the low-grade temperature, loss of appetite and malaise; this suggests the possibility of a deep phlebitis and a terminal issue from septic embolism. Most of the possibilities of death as outlined depend on the original disease for which the patient was treated — namely, carcinoma of the cervix. The background for the peritonitis, whether general or

local, appears to be perforation of the bowel, through either extension of the disease or radiation necrosis. She apparently died a respiratory death, possibly from pneumonia secondary to intra-abdominal sepsis.

What evidence have we for radiation necrosis? Sixteen months before entry, the patient had an operation. A cystic right ovary and tube were removed, and at that time a biopsy of the cervix was done. It is unfortunate that the biopsy was not done first. The diagnosis was epidermoid carcinoma, Grade III, and two months went by before any treatment was instituted. I am concerned about just what type of treatment was given. According to the record, roentgen-ray therapy was instituted, but no mention is made whether it was supplemented by intrauterine radium, which would make quite a difference. Obviously, the disease could not have been particularly evident to the eye, because they did the biopsy and then went ahead with a laparotomy to remove the tube and ovary. I think that one is justified in assuming that the carcinoma arose in the endocervical canal, and one may guess that by the time the patient reached the second hospital there was extension of the disease into the broad ligament, because of the slight hydronephrosis. As one continues, one finds that under treatment the hydronephrosis cleared. It may have been that the hydronephrosis was on an inflammatory basis, with sepsis giving rise to inflammatory nodes causing obstruction of the ureter, or disease may have been present that responded to radiation, thereby relieving the obstruction.

Dr. Tracy B. Mallory: The only additional information I can give you is that the patient was treated at the Pondville Hospital.

Dr. Parsons: That is very unfortunate, since I might have been responsible. However, I can now assume that the patient also had radium implantation because we believe at Pondville that roentgen-ray therapy alone, although it causes marked regression of the tumor, does not result in cure. One can get a perfectly extraordinary amount of regression of the tumor, and yet there will always be disease in the uterus unless the external radiation is supplemented by intrauterine radiation. Moreover, one should note that an operation was performed two months before the x-ray therapy. In other words, it is possible, particularly after the removal of the right tube and ovary, that the bowel became adherent at the site of the previous operation, and that as they cross-fired the radiation from one portal after another they continually hit the mesentery of a single loop of small bowel or perhaps the sigmoid, resulting in radiation reaction to the bowel. Such a result often appears six months to years later, and is consequently a definite possibility.

Another interesting feature is that the patient was running a low-grade temperature, 99.5°F., for some time. There is no history of any previous bouts suggesting small-bowel obstruction. The obstruction is obviously not complete because on x-ray study of the abdomen no dilated bowel was apparent. Then, as a further suggestion along the line of radiation necrosis in the terminal stage, she passed 250 cc. of bright blood by rectum. Against the diagnosis of radiation necrosis and perforation is the fact that the usual picture of radiation reaction in either the small or the large bowel is one of marked thickening of the bowel wall. Whether perforation occurs in such lesions, I am not entirely sure. I have had one case of reaction in the sigmoid from radium alone in which the small bowel became adherent, resulting in perforation of the small bowel and localized peritonitis, the small bowel being involved through contiguity.

The other suggestion — that this might conceivably be due to uncontrolled cancer — is discarded if we believe in the form of treatment given at Pondville, where I treat such patients, but it is still possible that we had not controlled the disease. This was a rapidly growing, Grade III lesion. The upper part of the vagina was obliterated, and it was therefore almost impossible to tell whether disease was still present. Rectal examination did not reveal a mass and no blood was noted, but the record does not say anything about the degree of the fixation of the pelvis.

In conclusion, I believe that this patient had radiation reaction of the bowel and general peritonitis; the physical signs of a dilated stomach, probably due to ileus were present. On the other hand, she did not have dilated loops of small bowel. Although she had distant peristalsis, there was no spasm and no tenderness of the abdomen, which worries me a little bit. It is possible that she had an embolus and that the radiation reaction that I believe was present still did not have anything to do with her death. She had moderately low-grade fever, 99.5°F., and general malaise. She had been hospitalized for a previous operation, and it is possible that at that time she had a deep phlebitis and that death may have occurred from pulmonary embolus, the radiation reaction being an entirely secondary and incidental finding. I am inclined to go out on a limb, however, and say that this patient died of peritonitis and pneumonia, and that the peritonitis was due

to perforation of the bowel secondary to perforated radiation necrosis of the bowel or possibly perforation secondary to uncontrolled disease.

DR. ALLEN G. BRAILEY: Were x-ray films taken of the lungs?

DR. MALLORY: I do not believe so.

CLINICAL DIAGNOSIS

Pelvic peritonitis.

DR. PARSONS'S DIAGNOSES

Peritonitis, secondary to perforated bowel, from radiation necrosis.
Pneumonia.

ANATOMICAL DIAGNOSES

Metastatic carcinoma, from carcinoma of the cervix.
Thrombosis of mesenteric, splenic and portal veins.
Infarction of the small intestine, acute.
Peritonitis, hemorrhagic, early.
Occlusion of cervical canal of uterus.
Pyometrium.
Cholecystitis, with cholelithiasis.
Operative wound: healed, right salpingo-oöphorectomy.

PATHOLOGICAL DISCUSSION

DR. MALLORY: The surgeons who took care of this patient on the wards were no more anxious to commit themselves than Dr. Parsons. They thought that she probably had a pelvic peritonitis, but they did not specify the cause thereof.

At post-mortem examination, it was found that nine tenths of the small bowel was completely necrotic, swollen, thickened and dark red and contained blood in its lumen. There was also free blood in the peritoneal cavity. The mesenteric, portal and splenic veins were completely thrombosed. The arterial supply of the small bowel was still apparently functioning. It was also found that the radium treatment had dealt satisfactorily with the local tumor. The cervical canal was completely obliterated. There was a pyometrium, but we could find no carcinoma in the uterus or immediate adnexa. However, the retroperitoneal lymph nodes were filled with metastases; one node was large enough so that it seemed to press on the mesenteric vein, and we thought that that, perhaps, was the immediate reason for the mesenteric thrombosis. However, it was merely a guess. I have not seen generalized venous mesenteric thrombosis result from radiation therapy and do not remember to have heard of it. I therefore doubt if the radiation was responsible. Certainly, there was none of the marked fibrous thickening of the bowel usually seen in radiation necrosis.

The lungs showed chiefly atelectasis and edema, although there was very slight beginning bronchopneumonia. There were a few other incidentals of not very great importance, the most striking one being a gall bladder containing a score of gallstones.

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A CHALLENGE TO FEDERAL, STATE AND LOCAL HEALTH DEPARTMENTS

War activities have produced some new health problems, but what is more important, they have served to focus attention on some old problems and to render certain ones more acute. The health of the soldier is vital, but so is the health of civilians, both because of the chance that soldiers may become infected from them, and because the urgency of producing articles of war demands that all workers be able to continue their tasks without absence due to illness.

Most problems that are arising are due to a shifting of populations. Not only are military forces being concentrated at given places, but to care for their needs, concentrations of civil populations are built up in the areas immediately surrounding such military establishments. War industries are also causing concentrations of civilian populations at points where the plants are located. Frequently, because of such concentrations, water supplies become inadequate and have to be supplemented from sources less reliable than the regular ones. Facilities for community sanitation become overtaxed and create situations that may allow the spread of communicable diseases. Conditions are most acute in the boom-town areas, where thousands of people flock into communities that formerly consisted of only a few hundreds of inhabitants.

These conditions are a challenge to federal, state and local health authorities. If the health of the nation is to be safeguarded in these strenuous times, efforts must be redoubled, and vigilance should be kept at a high level to guard against unsatisfactory conditions. Steps have already been taken to meet the challenge. The personnel of the United States Public Health Service has been considerably expanded; liaison officers have been assigned to all the military areas to aid in arranging for the co-operation of medical officers of the United States Army and Navy and the civilian health authorities. Federal funds have been made available to expand the staff of many state health departments, and other sums have been allocated to assist in providing water supplies, sewerage and housing developments in the areas most acutely affected. Local health authorities have accepted their responsibilities and have increased their activities to guard the health of the newcomers to their communities.

The Honorable Paul V. McNutt, administrator of the Federal Security Agency, in an address before the annual conference of state and territorial health officers in Washington, D. C., last spring, called attention to three of the most critical problems of the immediate future: industrial hygiene, medical and hospital care, and nutrition. These three problems have already received the serious consideration of health authorities, and definite plans are being formulated to find the best solutions for them.

New England is fortunate in that there are few areas in which the problems are so acute as they are in other parts of the country. Water-supply systems and facilities for community sanitation have usually been provided to care for considerable increases in population, so that, up to the present time, few have been overtaxed. This should not, however, result in a false attitude of security, and every available means to guarantee the continued health of military and civilian populations should be utilized by federal, state and local health departments.

KAREL FREDERIK WENCKEBACH

In the thunder and rumble of war, few people abroad and on this side of the Atlantic took notice that a heart had stood still that had been beating a lifetime for the benefit of countless other hearts. It was that of a man without whose work cardiology would not be what it is today.

Karel Frederik Wenckebach was born in 1864 in The Hague. After his graduation and a short interlude in anatomic and embryologic research he was compelled, for financial reasons, to give up his theoretical dreams and to go into rural general practice. His keen interest in scientific problems was not stifled, however. With a primitive sphygmographic apparatus, he made a series of fundamental discoveries, giving the first description and analysis of extrasystoles in the human heart and of disturbances in auriculoventricular conduction (periodically dropped beats).

His reputation became so outstanding that he was invited in 1901 to accept the vacant chair of clinical medicine at the ancient University of Groningen, Holland, an unprecedented honor for a young country doctor. A call to the University of Strasbourg followed in 1911, and in 1914 Wenckebach was appointed chief of the First Medical Clinic of the University of Vienna, which at this time was still one of the leading medical schools of the world.

Like most pioneers, Wenckebach had to overcome the opposition of more conservative groups of teachers, but with the appearance of his standard work on the cardiac arrhythmias in 1903, his position among the prominent scientists of his time became firmly established. In this classic book, he stressed the fact that arrhythmias do not always indicate an organic lesion of the myocardium but that, on the other hand, they are apt to lead to cardiac failure. In the second edition, published in 1914, quinine was recommended as a useful drug in cardiac disorders for the first time since 1749, when Senac, a physician to the Court of Paris, prescribed it for obstinate palpitation; the action of the drug was rediscovered by a patient of Wenckebach, and its value in cardiac arrhythmias was proved by him. Although in this edition only one single electrocardiographic curve was reproduced, the epoch of both sphygmographic and electrocardiographic arrhythmia research was brought to a successful conclusion in Wenckebach and Winterberg's monumental monograph, which appeared in 1927 and is still unsurpassed.

Wenckebach's work on the beriberi heart, carried out in the Dutch East Indies in 1929–1930, was the forerunner of the present conceptions regarding vitamin deficiencies in the circulatory system. His widely appreciated book on cardiac failure gave further proof of his keen clinical observation.

All in all, Wenckebach was one of the founders of modern cardiology. Many of his basic discoveries became so soon accepted as commonplace facts that their origin fell into undeserved oblivion. However, some of these are even today connected with the name of their discoverer: the "Wenckebach periods," the "Wenckebach bundle" and the "Wenckebach sign" of adhesive pericarditis.

The First Medical Clinic of Vienna was for years the goal of numerous European and American graduate students, in the fields of both cardiology and general internal medicine. Important diagnostic and therapeutic achievements originated under Wenckebach's guidance, such as the discovery by Saxl of the powerful diuretic effect of certain soluble mercury compounds, which greatly facilitates the treatment of congestive heart failure.

Wenckebach was by no means a dull, dry professional man, absorbed in scientific problems. His active interests roamed far and wide in the realm of the arts and literature, and his beautiful home,

with its choice paintings, sculptures and pottery, was an international center of intellectual and artistic life. His unusually charming and lovable personality, as well as the enormous dimensions of his private practice, brought him into close contact with a large number of Europe's most interesting people. A perfect gentleman, with a liberal, open mind, he knew how to enjoy life in a noble, refined way and also how to make it enjoyable for others.

Wenckebach's intimate friendship with outstanding British investigators, such as Mackenzie and Keith, enabled him to visit London after World War I, while the blockade was still in effect, to secure food transports for the starving Austrians and to save the famous Gobelin tapestries in Vienna from being sold for bread. After having completed a lecture tour through the United States in 1923, he often referred enthusiastically to the idealism and unbiased critical spirit of American scientific workers, which impressed him even more than the amazing technical facilities available in this country, and in his last letters to former pupils he expressed a hopeful belief in the present and future leadership of American medical research.

MEDICAL EPONYM

Morton's Toe

Thomas G. Morton (1835–1907), surgeon to the Philadelphia Orthopedic Hospital, described this condition in a paper, entitled "A Peculiar and Painful Affection of the Fourth Metatarso-Phalangeal Articulation," published in the *American Journal of the Medical Sciences* (**71:** N. S.: 37–45, 1876). He reported 15 cases, 13 of which were in women. All the patients complained of severe pain localized in the fourth metatarsophalangeal articulation. It was generally relieved by removal of the shoe. Some patients told of having to stop in the street for this purpose. Morton advised operation for the relief of chronic cases. The origin of the condition is described as follows:

> To the peculiar position which the fourth metatarsophalangeal articulation bears to that of the fifth, the great mobility of the fifth metatarsal, which by lateral pressure is brought into contact with the fourth, and lastly, the proximity of the digital branches of the external plantar nerve, which are under certain circumstances liable to be bruised by or pinched between the fourth and fifth metatarsals, may be ascribed the neuralgia in this region.

R. W. B.

MASSACHUSETTS MEDICAL SOCIETY

COMMITTEE ON MATERNAL WELFARE

Causes of Maternal Death in Massachusetts during 1940 (*concluded*)

Table 1 gives the final and correct classification for maternal deaths occurring in Massachusetts during 1940. Since the publication of the original table in the January 8 issue of the *Journal*, 2 cases have been added; but because the 2 deaths in women who were not pregnant have been dropped, the total (219 deaths) is the same. The most striking conclusions to be drawn from this study are covered by the following paragraphs.

There were 58 autopsies. This number is somewhat less than that for the cases in 1939. The value of autopsy cannot be emphasized too strongly. In certain cases, in no other way may an exact diagnosis be arrived at. It would be very helpful, as well as informative, if the medical examiners used their authority in demanding autopsies on cases of maternal death that came under their jurisdiction. Red tape and sentiment are the reasons why more permissions for autopsies in this group are not obtained. Several of these cases had only a clinical diagnosis, which would undoubtedly have been proved false could an anatomical diagnosis have been made.

Table 1. *Causes of Maternal Death.*

Cause	No. of Deaths
Sepsis	50
Medical diseases	42
Embolism	29
Hemorrhage	27
Eclampsia	24
Surgical conditions, including shock	15
Transfusion reaction	8
Rupture of uterus	8
Anesthesia	8
Ectopic pregnancy	6
Pernicious vomiting	2
Total	219

Reference has previously been made to the diminution in the number of deaths due to sepsis, and to the large percentage of deaths due to criminal abortion. Chemotherapy undoubtedly has played a large part in this fortunate decline. Undoubtedly, also, improved obstetric operating and an absence of bungling operating have been contributory.

Among the medical deaths, those definitely attributed to pneumonia emphasize the value of the

treatment of the common cold and the necessity for early diagnosis of pneumonia if chemotherapy is to be of any value. Heart disease has been proved to be a serious complication of pregnancy, as the number of patients who died undelivered bears evidence.

Several of the cases allocated to embolism may have been preventable. Undoubtedly, some of these cases had a low-grade phlebitis that was not recognized, and might have been treated successfully by surgery. Such methods of treatment, however, are new, and the patient must be treated only by surgeons particularly trained in this field.

The deaths attributed to hemorrhage are so closely allied with transfusion, or the lack of transfusion, that the two may be discussed together. It was surprising how many of the patients who died of frank blood loss were not given the benefit of the injection of whole blood. Blood banks are not yet established in some of the large municipal hospitals, so that one cannot criticize the lack of them in small, local institutions. But whole plasma is on the market, and although it does not always take the place of whole blood, it certainly tides the patient over in many cases that would otherwise result fatally. The 8 patients who died of transfusion reaction, of course, represent a very small percentage of the cases in which transfusion was used. And yet one cannot help believing that in some institutions the technic of matching and cross-matching has not been properly developed.

Under the cases allocated to eclampsia, some bring out the fact that many women in Massachusetts still have no prenatal care. Practically none of these women should have died. In only 1 case did poor obstetric operating play a major part in the fatality, but in many, unintelligent procrastination on the part of the medical attendant was the real reason for the death.

There is little to be said of the cases allocated to surgical conditions, which include mesenteric thrombosis, appendicitis, intestinal obstruction and surgical shock. Once more, it should be emphasized that intestinal obstruction does not lend itself to delay.

Several of the patients with rupture of the uterus died because of poor obstetrics, particularly those who died undelivered. Such fatalities can in no way be condoned. And those patients with rupture of the uterus, at the beginning of labor, on whom cesarean sections had previously been done, emphasize that such ruptures do occur, and that if one chooses to allow these patients to go through labor, they should be hospitalized at the very first sign of labor and watched very carefully, with the understanding that a laparotomy may be necessary.

The 8 deaths due to anesthesia are far too many; of course, all were preventable.

Under ectopic pregnancy, the unusual case of abdominal pregnancy has previously been mentioned. Any abdominal pregnancy is a serious condition. In this case, the diagnosis was entirely missed. The 5 patients with tubal pregnancies who died of massive hemorrhage, without operation, show how serious the condition may be; there must have been previous bleeding that went unrecognized, either because of the patient's ignorance or because of the ultraconservatism of the physician.

That pernicious vomiting may still cause death means only that patients are ignorant or negligent in reporting to their physician, or that the physician is ignorant or unintelligent in his treatment of this complication.

The committee once again expresses appreciation for the time and energy spent by the physicians who investigated these deaths in different parts of the State. It also thanks the physicians interviewed for their willingness, almost without exception, to co-operate with the investigators. The deaths for one more year, 1941, remain to be classified, and the investigation is now under way. The national emergency will make this study more complicated, because some of the physicians whose cases resulted fatally will have been called to war. This is appreciated, but under these circumstances, hospital authorities are requested to instruct their record departments to be most lenient in allowing investigators, who sometimes have come many miles, to look up facts about these cases. Unfortunately, there has been hesitancy to grant this privilege in the past.

"TUBERCULOSIS IN CHILDREN"*

It might be interesting to those who are listening if I simply stated a few of the questions most frequently asked by the parents and other relatives of patients at the Children's Hospital when the question of tuberculosis is raised. Some points recur so commonly under those circumstances, and we have had to explain some things so often, that I am sure many people lack information about them.

The first question asked is, Do children or babies really have tuberculosis? The answer is obviously that they do, and also that they have it oftener than the public realizes. The way tuberculosis shows itself (or fails to show itself) differs in child patients from the way it acts in adults, but children and even babies as young as a few weeks of age may and indeed do have the disease.

Another question often asked is, Do they inherit it? The question may be asked in another way, when the

*A "Green Lights to Health" broadcast given through Station WAAB by Dr. Clement Smith on November 29, 1941, and sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

parents of a tuberculous child say: "None of my relatives have tuberculosis; I don't see how my child could have gotten it." To answer the last statement first, it may be pointed out that one of the very important things about this disease in general is that many tuberculous people have so few symptoms or such indefinite symptoms that they do not suspect that they are ill. But beyond that point, it should be said that the disease is not inherited by children. Physicians often say, and probably with reason, that although tuberculosis itself is not passed on from generation to generation, some families seem to inherit a susceptibility to it, or seem by virtue of their inherited constitution to be likelier to develop it, but the actual condition of being born with the germ of tuberculosis in the body, although even that occurs very rarely, is, generally speaking, not the way babies get tuberculosis. Tuberculosis comes from tuberculosis, not by inheritance but by catching the germs of the disease just in the same way that whooping cough is caught from someone who has whooping cough. It may take a good deal of contact with a tuberculous person to infect a child with the disease, but not necessarily, since perfectly definite cases have been traced to only one meeting between an uninfected child and a diseased adult. Undoubtedly, numerous cases of infection occur quite by chance in crowded places, — when children are taken into streetcars or stores, or places of amusement, — since the more people a child is in contact with, the more probable it is that some of them may be harboring the germs that may infect the child. But by all odds, the commonest single place where children and babies acquire tuberculosis is in the very place where they ought to be safest, that is, in their own homes, and this is a strange thing when one thinks that traditionally the home constitutes the barrier that parents build as the one place of refuge for their children against the dangers of the world. Of course, the source of the infection at home is usually an older person, who either has the disease and refuses to do anything about it or, more commonly, has it and is not aware that he has it. One leading professor of children's diseases has made the very true statement, "There are two ways to find that a man has tuberculosis — one is to find the germ in his sputum, the other is to find the disease in his baby." This is equally true, of course, of a mother.

A fourth question is asked in this way: "I don't see how the child can have tuberculosis, Doctor, because he has never been sick. In fact, he is one of the healthiest-looking children in his school. He is not thin, he's full of energy, and he doesn't cough." That question brings up the whole peculiarity of tuberculosis in general, and particularly of the disease in children and babies. As you know, it may smolder in adults like a concealed fire somewhere under the surface and without any signs of itself until gradually it progresses to a stage where symptoms occur. At first, these are very indefinite ones of tiredness, loss of weight and so forth. In babies and children, this peculiar lurking quality of tuberculosis is even more evident, so that we find it to be present, and quite often present to a rather widespread degree, in children who are fat and happy, and have no cough or other symptoms. Therefore, a very important thing about handling the tuberculosis problem in childhood and infancy is that we must look for the disease before it has gone far enough to show the signs that the public usually associates with it. One tragic thing is that often in young babies the first outward symptoms that a mother or father observes may be the indications that the disease has gone beyond the point where there is any hope of bringing about a recovery.

A fifth question, which follows from this former one is, of course, How can the disease be found before any symptoms appear? Fortunately, there are several very good procedures for doing this, none of which take very much time or trouble. Of course, one thing of prime importance is to apply these procedures, if not to all children in the population, at least to children whose parents or relatives are known to have the disease and who might thus have been exposed to it.

The means of searching are first of all the simple and highly reliable tuberculin test, which as performed at present requires a nearly painless needle prick, although a method is now being developed that avoids even the needle prick by simply applying the testing substance against the skin under a strip of adhesive tape for a few days. No particular danger or discomfort is associated with either of these tests, even if a reaction develops. If properly performed and interpreted, the test should pick out practically all the children into whose bodies the germs of tuberculosis have entered. The ones who show that this has happened can be given an x-ray examination of the chest, to reveal whether the infection is in a severe state, or whether it is so mild as simply to need repeated examinations during the course of childhood.

And, since in considerable part the danger is determined by the x-ray findings, this naturally leads to the sixth and very crucial question on the part of the parents and relatives, "How dangerous is tuberculosis in a baby or child?" This question must be answered in a particular and not a general manner, because so much depends on the age of the child and on how far the disease has progressed before it has been discovered. In general, it may be said that all babies up to the age of two or three years do not do so well with the disease as older children do, so that there exists a high point of greatest danger during the second year of life. After this, the danger diminishes a good deal, so that between the ages of seven and twelve, children seem to have a remarkable resistance, at least to tuberculosis of the lungs. After that, when children, particularly girls, get into the teens, the resistance is lessened, and the outlook for a tuberculous child of fourteen or fifteen may become as serious as that for a tuberculous infant. But even in infants who have not much resistance, if we can discover the infection early and get the child under care at that time, certainly at least 90 per cent of patients will do well. On the other hand, if the disease is not brought to attention until symptoms develop, the figure may be nearer 50 per cent, with a much greater number of children who do not survive — a striking example of the value of finding the infection early in those babies and children who acquire it.

How long does it take to get better? That is not an easy question to answer, but we have noticed at the hospital that, if a child is doing well twelve months after we first find the disease, we can expect him to do quite well thereafter; therefore, we can tell parents (even the parents of small infants in a dangerous age) that when we have known their child for a year we can give them a much brighter outlook. But we can never drop an infected child from some sort of care then or even thereafter. We do not need to keep the child an invalid, but we consider it proper for all these children to be examined once a year through childhood and adolescence, and preferably until they are at least twenty-five years old, for the sort of insurance that an annual examination gives. At such annual examinations, during adolescence, it may

be wise to take an x-ray film for checkup purposes. In the safer age period of midchildhood, repeated annual x-ray studies are probably not required. Of course, these children do not need to be invalids all this time, and almost all, after the critical first year has passed (and sometimes before that), can be allowed to lead perfectly normal lives.

What is the best treatment for babies and children with the disease? Unfortunately, we have no medicine that kills the tuberculosis germs at present, although we live in hope. Some children, particularly those in whom the lungs are diseased in adolescence, may need special air-injection treatment to rest the involved lung. In the large majority of patients, all we can do is to believe that bringing about the best possible state of general health for the child will offer him the greatest chance for complete permanent recovery. This may mean care in a sanatorium, it may mean rest at home, it may mean special medicine and diet to build up the child or it may mean that the child is already in such good household surroundings that we need do little further except to supervise the parents' care. But that brings up another important thing — which is that the child should no longer remain in contact with diseased adults who may be passing on the infection to him, so that one very important thing that we can do just as soon as we find an infected child is to make sure that no one in the household is (either knowingly or unknowingly) diseased and thus acting as a source of germs that may be passed further to the patient. This requires co-operation on the part of the parents and a certain amount of work in arranging for examinations, but in the long run it is helpful not only to the child but to the parents, and of course, to any other children in the family.

In conclusion, it is appropriate to bring up the question, How are these things done? In Massachusetts, they are done in part by an expert body of state and city workers, who, fortunately, have a very well-staffed and well-equipped group of hospitals and sanatoriums to which patients may be sent. But by no means does all the budget for this kind of work come from the state and municipal funds; in fact, a large part of it comes from the Massachusetts Tuberculosis Association and is supported by the Christmas Seal sale. In the numerous jobs that have to be done to straighten out the family situation and to heal and to protect the child with tuberculous infection, we are constantly helped by things that the Christmas Seal sale has made possible. If it becomes necessary to send the child to a more healthful environment than he can have at home, we may find care for him in such a place as the Prendergast Preventorium, which is actually supported by the annual Seal sale. If it is necessary to help his convalescing father to find work, the Sheltered Workshop, which is also supported in this way, may be of assistance. There are many other important ways in which the money that you pay for Christmas seals reaches the situation in a way that makes you yourself an effective agent in meeting problems that are commoner than you may realize.

DEATHS

DALTON — Charles H. Dalton, M.D., of Somerville, died February 12. He was in his sixty-sixth year.

Born in Charlottetown, Prince Edward Island, Dr. Dalton received his degree from McGill University Faculty of Medicine in 1901. He was on the staff of the Somerville Hospital, and was a fellow of the Massachusetts Medical Society and the American Medical Association.

He is survived by his widow and five sisters.

WAKEFIELD — Arthur Paul Wakefield, M.D., of Belmont, died February 6, in his sixty-fourth year. Born in North Bloomfield, Ohio, he graduated from Hiram College in 1900 and received his M.D. degree from Rush Medical College in 1904. After a brief period of private practice, he went to China as a medical missionary and remained there for twenty-two years. He was in charge of a hospital in Luchowfu from 1912 to 1916 and then became director of student health at Boone University at Wuchang. This position he held until the Chinese revolution of 1927 made it necessary for him to leave the country. The Chinese National Red Cross decorated him for flood relief on the Yangtze and reconstruction work at Wuhu. On his return to America, he supervised the school clinics conducted by the Massachusetts Department of Public Health for five years, and then became superintendent of the Central Maine Sanatorium at Fairfield. He returned to the Massachusetts Department of Public Health in 1937 and was given the task of organizing and directing the Clinics for Crippled Children. Under his guidance, these clinics have been very successful in bringing aid to hundreds of handicapped children. His crusading spirit, kindness and persistency in the face of obstacles made him exceptionally well qualified for this type of work.

His widow, a son and two daughters survive him.

WAR ACTIVITIES

CIVILIAN DEFENSE

Relation of Red Cross Chapters to Defense Councils

A joint statement of policy governing the relation of Red Cross chapters to state and local defense councils, as developed by the Office of Civilian Defense, Office of Defense Health and Welfare Services, and the American Red Cross, was issued December 28 and published in *Victory*, the official weekly bulletin of the agencies in the Office for Emergency Management, as follows:

I. The Red Cross through its chairman as a member of the Civilian Protection Board has made available all of its services as needed by the United States Office of Civilian Defense and state and local defense councils. As illustrative of its national services, attention is called to the programs involving blood plasma, medical technologists and nursing enrollment. The Office of Civilian Defense and the American Red Cross are agreed that defense councils and Red Cross chapters should develop local plans of co-operation in their civilian-defense activities.

II. Recognizing the basic responsibility of government, it is the duty of every Red Cross chapter and branch to aid in the most efficient marshalling of the community's resources. It is agreed that duplication should be avoided in these services and training courses required in civilian-defense activities and that the long-established Nation-wide program of the Red Cross should be utilized to the fullest extent.

III. Services required in civilian-defense activities will be made available by chapters to defense councils in accordance with the policies herein stated. Chapters will co-operate to the fullest extent and, during the period of emergency, will operate subject to the authority of the defense councils or appropriate governmental officials. The Red Cross at all times will maintain administrative and financial control of its immediate operations.

IV. Chapters should expand Red Cross services and training courses within the scope of their responsibility

so that they may be prepared to give such services as are needed in the local programs of defense councils.

V. In the specific application of the above general policies, it is agreed that the areas of Red Cross responsibility shall be:

1. Red Cross chapters will be prepared to function, in the following fields of activity in full co-operation with all public and private agencies:

a. Disaster relief — training and service — food, shelter, clothing and other necessities of life in the event of disaster, whether occasioned by belligerent action or other cause.
b. First aid — training.
c. Nurse's aides — training and service.
d. Red Cross home nursing — training.

2. Red Cross chapters will assist defense councils in the following fields on the basis of mutual specific agreements as to lines of responsibility:

a. Disaster relief — service — will assist local defense councils in rescue work and emergency medical care.
b. Nutrition aides — training and service.

3. Red Cross chapters will make available to defense councils as needed the services of the following volunteer special service units, which shall at all times maintain the Red Cross unit organization (see III above):

a. Motor corps — service.
b. Production corps — service.
c. Staff assistance corps.
d. Canteen corps and canteen aides — service.
e. Hospital and recreation corps — civilian hospitals — service.

4. Red Cross chapters in their services to the armed forces are fully responsible for the following activities:

a. Information and claims — service.
b. Communications and reports.
c. Consultation on personal and family problems.

5. The functions of Red Cross chapters adjacent to Army posts and Naval stations include the following:

a. Hospital recreation corps — training and service — in military hospitals.
b. Motor corps — training and service — service originating on military reservations.
c. Production corps and staff assistance corps — activities on military reservations.
d. Participation in Red Cross camp and hospital-service councils.

6. Junior Red Cross:

a. The participation of boys and girls in elementary and secondary schools in Red Cross services through Junior Red Cross programs should be maintained in the same relation to local defense councils and to the armed forces as is established in this statement with respect to its parent organization. Junior Red Cross activities will be channeled through the local Red Cross chapter.

b. Red Cross chapters will make available to defense councils as needed those activities of the Junior Red Cross which contribute to the health, welfare and unity of schools and communities.

NEW HAMPSHIRE MEDICAL SOCIETY

DEATHS

DAUDELIN — Alfred Daudelin, M.D., of Nashua, died September 21. He was in his sixty-fourth year.

Born in Nashua on June 6, 1878, Dr. Daudelin received his degree from Baltimore Medical College in 1908. After practicing in Somersworth, he returned to Nashua, where he held memberships in the county medical association, the New Hampshire Medical Society and the American Medical Association. He served on the Nashua Board of Health for several years, and was a former city and county physician.

His widow, Mrs. Eugenie Daudelin, and a sister, Miss Phoebe Daudelin, survive him.

DEMING — Robert M. Deming, M.D., of Glencliff, died January 28. He was in his forty-ninth year.

Born in Elizabethtown, New York, Dr. Deming attended Colgate University and received his M.D. degree from University of Vermont College of Medicine in 1916. He served for two years with the British Medical Corps in World War I. He was superintendent and medical director of the New Hampshire Tuberculosis Sanitarium, and was a member of the National Tuberculosis Association and a fellow of the New Hampshire Medical Society and the American Medical Association.

He is survived by his widow, Mrs. Lolita Smith Deming, and his mother, Mrs. Mabel S. Deming, of Ballston Spa, New York.

SANBORN — Benjamin E. Sanborn, M.D., of Manchester, died October 3. He was in his fifty-seventh year.

Born in Deerfield, Massachusetts, in 1885, the son of Benjamin E. and Alice (Johnson) Sanborn, Dr. Sanborn received his degree from Dartmouth Medical School in 1911. He spent the next three years as an intern at the Massachusetts State Hospital and at the Rhode Island Hospital, and established his medical practice in 1914. He was a member of the New Hampshire Medical Society and the American Medical Association.

He is survived by his widow, Mrs. Shuah Hobbs Sanborn.

MISCELLANY

TEWKSBURY STATE HOSPITAL AND INFIRMARY

Dr. Lawrence K. Kelley has recently resigned as superintendent of the Tewksbury State Hospital and Infirmary; he plans to re-enter private practice. To date, the vacancy has not been filled by the trustees of the institution.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR DECEMBER, 1941

Diseases	December 1941	December 1940	Five-Year Average*
Anterior poliomyelitis	7	0	1
Chicken pox	1603	1680	1470
Diphtheria	19	9	18
Dog bite	577	591	559
Dysentery, bacillary	16	3	13
German measles	68	48	53
Gonorrhea	273	294	423
Measles	678	1165	1101
Meningitis, meningococcal	12	7	6
Meningitis, other forms	6	—	—
Mumps	1460	597	475
Paratyphoid infections	4	1	3
Pneumonia, lobar	208	407	437
Scarlet fever	1171	642	648
Syphilis	335	376	442
Tuberculosis, pulmonary	228	314	264
Tuberculosis, other forms	28	28	29
Typhoid fever	8	6	8
Undulant fever	3	5	5
Whooping cough	828	1161	983

*Based on figures for preceding five years.

Geographical Distribution of Certain Diseases

Anterior poliomyelitis was reported from: Easthampton, 4; Fort Devens, 1; Hardwick, 1; Somerville, 1; total, 7.

Anthrax was reported from: Lynn, 1; total, 1.

Diphtheria was reported from: Boston, 2; Everett, 1; Fall River, 8; Lowell, 1; Norfolk, 1; Palmer, 1; Somerville, 1; Springfield, 1; Stoughton, 1; Taunton, 1; Webster, 1; total, 19.

Dysentery, bacillary, was reported from: Boston, 1; Brockton, 1; Easthampton, 3; Fall River, 2; Northampton, 1; Waltham, 8; total, 16.

Encephalitis, infectious, was reported from: Haverhill, 1; total, 1.

Meningitis, meningococcal, was reported from: Boston, 2; Brockton, 1; Fitchburg, 1; Framingham, 1; Gloucester, 1; Mendon, 1; Milton, 1; New Bedford, 1; Norwood, 1; Waltham, 1; Worcester, 1; total, 12.

Meningitis, other forms, was reported from: Gloucester, 2; Haverhill, 1; Norwell, 1; Salem, 1; Waltham, 1; total, 6.

Paratyphoid infections were reported from: Marblehead, 1; Medford, 1; Salem, 1; Westwood, 1; total, 4.

Pellagra was reported from: Boston, 1; Quincy, 1; total, 2.

Septic sore throat was reported from: Boston, 6; Boxford, 1; Cambridge, 1; Everett, 1; Fall River, 3; Greenfield, 1; Malden, 1; Plymouth, 1; West Springfield, 1; total, 16.

Tetanus was reported from: Wakefield, 1; Woburn, 1; total, 2.

Trachoma was reported from: Worcester, 1; total, 1.

Trichinosis was reported from: Attleboro, 5; Camp Edwards, 3; Chelsea, 2; Everett, 1; Wakefield, 1; total, 12.

Tularemia was reported from: Lawrence, 1; total, 1.

Typhoid fever was reported from: Boston, 3; Chelsea, 1; Danvers, 1; Newton, 1; Stoughton, 1; Wellesley, 1; total, 8.

Undulant fever was reported from: Boston, 1; Northbridge, 1; Webster, 1; total, 3.

Mumps continued to show record high incidence for the sixth consecutive month.

Bacillary dysentery, chicken pox, diphtheria, dog bite, German measles, meningococcal meningitis, paratyphoid infections and scarlet fever were reported above the five-year averages.

Typhoid fever was reported at a figure equal to that for the five-year average.

Measles, pulmonary tuberculosis, tuberculosis, other forms, undulant fever and whooping cough were reported below the five-year averages.

Lobar pneumonia showed record low incidence.

The focus of animal rabies which has been noted in the northeastern section of the State is still active in Middlesex County, cases having been reported from Burlington, Wilmington and Woburn.

REPORTS OF MEETINGS

SUFFOLK DISTRICT MEDICAL SOCIETY

At the regular fall meeting of the Suffolk District Medical Society, October 22, presided over by Dr. Albert A. Hornor, Dr. Harold C. Stuart discussed "Experiences in Unoccupied France during 1940–1941." The Rockefeller Foundation, which for sixteen years had been attempting to develop an efficient public-health service in France, withdrew at the beginning of World War II, only to return following the fall of France; it was to establish such a service that Dr. Stuart, among others, was asked to go to France. He recounted the delays and inconveniences caused by the lack of co-operation by the civil authorities, although promises had been given and arrangements made many months before. But finally he and his associates were able to set up up a sort of regional institute at Marseilles.

Some idea of the state of affairs in Marseilles may be gleaned from a comparison with a city such as Boston, of approximately the same population. In the first place, 500,000 refugees entered the crowded city; then the confiscation of 140,000 freight cars from France (with as much cattle and produce as they held) markedly decreased the facilities for transportation of people and food; the lack of fuel further limited the amount of travel, even though some compensation resulted later from the conversion of larger trucks and buses into wood-burners; even power plants were curtailed in fuel, thereby further limiting tramway travel. Two million five hundred thousand prisoners in Germany decreased the manpower to critical levels and made the task of those remaining more difficult. Recreation was so restricted that people went to drab cafes and dull theatres only to take advantage of the warmth afforded by the crowds. The existence for foreigners was particularly trying, since they could obtain no work without a citizen's certificate nor any relief from the community. The eventual result was their getting into trouble and being sent to concentration or work camps, in which the living conditions were inconceivably bad, no attempt to improve them being made.

In regard to the food situation in Marseilles, which was the particular problem of Dr. Stuart, the most notable lacks were of animal proteins and fats. This was especially trying on infants and children, who were allotted one and a half pints of milk below eighteen months of age and one pint between eighteen months and five years. Nobody over five years was allowed milk at any time, and even the above schedule far from assured the children sufficient milk. Bread rations were decreased from 350 to 240 gm. per day; 90 gm. of almost inedible goat and horse meat was allowed about twelve times a month, 15 gm. of vegetable fat a day, 1 pound of sugar a month, and 20 gm. of cheese, which was considered a real delicacy, five times a month. Obtaining food was usually the most difficult task, often requiring a three hours' wait to obtain little or no food. Therefore, Dr.

Stuart and his group stayed in hotels where the more placid and acclimated natives endured the delay.

For the scientific study that was carried on, the group attempted to obtain a crosssection of the population and to measure the intake of various foods. There were 100 families, in addition to 100 children (for age distribution), so studied, and appropriate blood studies were carried out. Incidentally, most of the equipment arrived from America either very late or not at all. The subjects were observed for intake in the home, and then underwent a physical examination at the clinic. Although citrus fruits were virtually unknown, and the blood ascorbic acid levels were invariably zero, no examples of true clinical scurvy were found. Vitamin A levels were also low. The protein values, on the other hand, were not appreciably lowered, and the erythrocyte and hemoglobin counts were satisfactory. The failure of iron-deficiency anemias to occur was attributable to the importation of boatloads of green vegetables from the African colonies during the winter and spring. The high phosphatase levels could be expected from the high incidence of rickets, which was not much different from that in prewar times. The results of these preliminary studies were about what might be expected in a country where a severe shortage has been felt for only a relatively short period. There were many early manifestations of deficiency syndromes, and more recent reports indicate that severer deficiencies are already appearing and promise to become commoner during the winter.

Dr. Stuart described the relief work being carried on by the Swiss and American organizations, which act in the role of medical advisers to the population. In this manner, the relief workers were able to obtain the confidence of the people, who were naturally more interested in relief of their suffering than in surveys.

Finally, the speaker summed up his impression of the feeling in France toward the Nazis, the English and the Americans. Apparently the majority of the population is grateful for the assistance of America, intensely hates the Nazis, and is willing to become allied with any enemy of theirs.

Dr. W. D. Robinson, who was on a similar mission to Madrid, compared his observations with those of Dr. Stuart. In Spain, the deprivation has been going on for a longer time, and reconstruction has been hindered by the persistence of intense lack of unity. Rations are about as in France, but an active bootleg trade alleviates matters somewhat, at least for the financially fortunate, and a great deal more food can be obtained from the United States, where there is only one border to be crossed. The native diet was found particularly inadequate in calories, protein, calcium and vitamin B. Vitamins A and C levels were adequate during the summer months when the survey was made, for at that time there were sufficient green vegetables. Although little classic deficiency disease was encountered, the children were definitely retarded, and conditions were reported worse in southern Spain. The nutritional outlook is dismal, for the grain crops do not appear promising, the Spanish government is trying unsuccessfully to be self-sufficient, and the relief agencies are being continually thwarted by the administration.

In reply to a question whether food was entering unoccupied France from the Nazis as a result of their collaboration pact, Dr. Stuart stated that exactly the opposite was taking place. Furthermore, the 100,000 prisoners returned to France as part of the same agreement were the physical and mental derelicts who were merely a burden to Germany and less than no help to the disillusioned French people. In conclusion, Dr. Stuart pointed out that the most pressing immediate problem is an emotional rather than a nutritional one, but that the relief work in the nutritional field is the surest way of building up the necessary morale.

BOSTON LYING-IN HOSPITAL JOURNAL CLUB

At a regular meeting of the Boston Lying-in Hospital Journal Club held at the hospital on October 30, Dr. Norris Vaux, of Philadelphia, spoke on "Some Local Uses of Estrogenic Hormones in Obstetrics and Gynecology."

This method of therapy was undertaken for several reasons. In the first place, in certain conditions and patients, the local tissues respond poorly if at all to the parenteral injection of these hormones. Furthermore, the local application of the effective hormone has the advantages of easier use, a better concentration, a prompter effect and less systemic reaction. The conditions in which this mode of therapy has found favor include gonococcal vulvovaginitis in children, postmenopausal atrophic vaginitis, and hypoplastic and aplastic breasts and vulvas of young women.

In general, in the vaginal cases, a highly aqueous, acid solution of one of the estrogenic hormones is used. Besides the well-known increase of cornification of the vaginal mucosa, this increase of acidity adds another beneficial factor. Other forms of application have been suppositories and jellies with pH 4. In certain cases, mild antiseptics are added to the liquid or other medium and are thought to have certain definite advantages. It is actually a combination of two recognized forms of treatment. The antiseptic serves to control temporarily the sepsis until the hormone is effective. Smaller dosages of the hormone then become effective, which is a particularly important consideration in immature girls, in whom larger doses might cause premature development or unpleasant symptoms. Finally, it has been demonstrated that the inclusion of antiseptics does not inhibit the action of the hormones.

This form of therapy has been employed in the rather unusual syndrome of atrophic vaginitis in young adult women, in which the vaginal mucous membrane is thin, shiny and often ulcerated. Bacteriologic studies reveal a mixed flora, and the persistent discharge is invariably found to be alkaline. The epithelial cells contain no glycogen. The menstrual cycle is usually only slightly disturbed, whereas the urinary estrogen values are more or less normal. As might be expected from these observations, the vaginal mucous membrane responds only to large doses of hormone. The use of 5-mg. suppositories of stilbestrol brought about clinical improvement, without any change of the menses but with noticeable changes of the vaginal mucous membrane. Withdrawal of the hormone caused an exacerbation of all symptoms and seems to indicate that continuous treatment is necessary to alleviate the symptoms.

In cases of pruritus vulvae and kraurosis, enormous doses were necessary to procure the desired effect. For this purpose, stilbestrol in oily form was dissolved in a vanishing-cream base, with from 10 to 100 mg. of the hormone to the 30 cc. of cream. About 4 gm. of this preparation was then daily applied to the affected area.

Certain cases of atrophic breasts have been found to respond to local therapy when other methods have failed. Here again stilbestrol in a vanishing-cream base has proved the most convenient and effective form of treatment. The addition of equal amounts of testosterone

seems to be measurably beneficial. In certain cases in which the breast tissue itself failed to respond to this treatment, the nipple was invariably improved in size and consistence. This consideration is of great significance when a patient desires to nurse her children. In this particular field, hormonal assays appear to be of little value. An example was cited of the selective effect of local estrogenic therapy in unilateral breast hypoplasia.

The discussion was opened by Dr. George V. Smith, who agreed that the local use of such hormones was proper in the treatment of the vagina, but who questioned their use on the vulva. In the latter, the condition invariably involves the neighboring thigh regions and reveals the presence of superimposed mycotic infection. Relief from this may be obtained by the use of proper skin remedies or antiseptics. Furthermore, the fact that such conditions of the vulva are generally accepted to be precancerous makes the operation of vulvectomy appealing.

Dr. Sidney C. Graves reported a series of 17 patients with pruritus vulvae and kraurosis treated with estriol in oil, 5000 units per day for four to eight weeks. Eight showed improvement, 6 were unchanged, 2 could not be followed, and 1 was actually worse. Of the 8 who were considered improved, 3 eventually came to operation, 1 was just as comfortable with Metaphen (in oil) injections, and 1 still revealed evidence of local disease despite the alleviation of symptoms. Two other patients had remissions of leukoplakia and kraurosis during pregnancy, but 1 received subsequent estrogen therapy and the other had a subsequent relapse. The finding of a proliferating endometrium in postmenopausal patients thus treated leads to some worry and raises the question whether long-continued administration of hormones in such patients is wise. On the other hand, in a series of 60 cases of carcinoma of the vulva, it was found that kraurosis and leukoplakia had previously existed in 38. Finally, roentgen therapy as a method of treating these conditions was deplored, for there is an increase in the amount of pain and discomfort, as well as failure to improve.

Dr. John Rock pointed out that these observations serve to emphasize that hormones, although widespread in their bodily distribution, may cause either extravagant or no reaction in a given tissue. It was reiterated that symptoms caused by superimposed infection should not be attributed to atrophic conditions around the female genitalia. Dr. Rock agreed that large doses of estrogenic hormones may be used with impunity in human beings, even in the breast, for the experiments in rats that have been cited as proving the carcinogenic effect of these hormones have not been substantiated in human subjects.

GREATER BOSTON MEDICAL SOCIETY

A meeting of the Greater Boston Medical Society was held at the Beth Israel Hospital on November 4, with Dr. Samuel L. Gargill presiding. The speaker of the evening, Dr. I. S. Ravdin, of Philadelphia, spoke on "Recent Advances in the Treatment of Patients with Biliary-Tract Disease."

In introduction, it was stated that most of the decrease in mortality in this field can be traced to improvements in preoperative and postoperative care. As a result of extensive studies, it has been determined that no one of the current liver-function tests alone is superior to the usual clinical and laboratory tests in evaluating the preoperative conditions of such patients. Some useful information may be added by the judicious employment of more than one of these procedures in cases in which more than reasonable doubt exists, but a sense of false security should not result from any test. All these tests attempt to determine the exact extent of liver damage, but it has been found that practically all surgical cases are at one end of the scale or the other, where there is no need for such accuracy. It has been determined that primary cholelithiasis, even with extensive liver disease, rarely diminishes the liver function, and that there is often no correlation between liver function and the histologic findings in the liver.

The not uncommon association of diabetes with biliary-tract disease is often overlooked or poorly handled. Because of poor glycogen storage, such patients may easily be thrown into insulin shock by the injudicious use of this drug. There is no need of immediate and intensive treatment unless there are signs of acidosis, for the shock produced may be irreversible.

Biliary disease also seems to bear a close relation to heart disease, especially angina pectoris. Certain changes in the electrocardiograms of cardiac patients disappear following biliary surgery, and these have been interpreted as being due to the toxic effect of such lesions on the heart. It is essential, therefore, not to postpone the benefits of surgery because of pseudoanginal pains. It is possible on the operating table to demonstrate reflexes arising in the biliary tree that closely simulate angina pectoris but differ slightly, usually in that they occur when the patient is at rest. People with gall-bladder disease may, of course, have true anginal attacks, which are exaggerated by the biliary-tract disease; all such pains must not be considered cardiac in origin, however.

Postoperative hemorrhage, which was formerly the bugbear of biliary surgery, has now been largely overcome by the introduction of vitamin K. The exact mechanism by which this substance aids in clotting is not as yet agreed on, but it is known that this substance is fat soluble and requires sufficient amounts and proper types of bile salts for absorption. Failure to respond to vitamin K therapy can often be remedied by the feeding of a normal, well-rounded diet. It should be stressed that hemorrhage may occur after the jaundice has subsided, and vitamin therapy should therefore be continued for ten to fourteen days postoperatively.

Postoperative hepatic degeneration from anesthetic agents is another complication that is being overcome. Most so-called "liver-shock cases" are in reality due to this, and all inhalation anesthetics have been found to exert some deleterious effect. Although it was formerly believed that a high carbohydrate concentration in the liver was the best protection against this toxic effect, it has recently been demonstrated that the protein content is of much greater import. The amount of degeneration caused by any anesthetic is now known to be proportional to the lipid content of the liver, which, in turn, is undoubtedly related to the solubility of these agents in lipids. Carbohydrate does aid to some extent in temporarily sparing the glycogen deposits of the liver, but even the usual parenteral intake of 3000 cc. of 5 per cent glucose a day supplies only 600 of the more than 1600 calories that are required for a minimum maintenance of an adult at rest in bed. Factors that have been shown to condition the amount of liver necrosis following a volatile anesthesia are the fat concentration of the liver, the protein storage of the body, the amount of anoxia — especially of the liver — and the degree of preoperative starvation. Analysis of the livers of animals reveals that a high-fat, low-protein content is the most susceptible to hepatotoxins, whereas a low-fat, high-protein content shows the least. Although Whipple considers methianine to be the protective molecule, Dr. Ravdin believes that it is only a fraction of it. The deposition of glycogen is advantageous only so far

as it displaces lipids and thus protects the liver stores. It was found that the most satisfactory means of obtaining these protein levels was by forced feeding, and that voluntary feeding, in addition to the parenteral use of glucose, was far superior to the latter alone. The most suitable protein so far found is casein, which is abundant in cottage cheese. Also used are Casec and protein digests, but the widely advertised gelatin is far inferior. That the additional protein must be suitable was demonstrated by feeding beef heart to animals and thereby actually increasing rather than decreasing the lipid content. If only the parenteral route is available, glucose and plasma are most effective, but nothing has been found to equal oral feedings. Despite already existing liver damage, every patient can be improved preoperatively by an adequate diet.

The indications for common-duct exploration are essentially those in common usage, but it is believed that this procedure should be carried out oftener. When such an operation is properly performed in competent hands, the mortality should not be materially higher than in the simple operation. Postoperatively, however, the draining bile should not be wasted even if the bile-salt concentration is low, for it is in this way that asthenic states develop, probably because of the extrahepatic importance of bile. A simple method for overcoming this difficulty is to connect a drainage bottle at the same height as the duodenum and thus cause the bile to flow into the gastrointestinal tract.

Postoperatively, the diet also plays a significant role, and the same principles apply as in the preoperative management. The best regimen is still unknown, but protein is certainly necessary. Carbohydrate aids only so far as it allows endogenous protein to be freed for use in regeneration of liver. In dogs, the best regeneration was noted when the protein fed contained 25 per cent liver.

Vitamin K therapy should be resumed postoperatively and continued until wound healing is assured. The blood values may and probably do fall after operation, so that preoperative values are not significant. Patients who fail to respond to such therapy before operation will not respond afterward, and should therefore receive blood or plasma. The T tube is never removed until a cholangiogram has been carried out, for even the best surgeons have been known to overlook a stone at operation. The mortality in common-duct explorations at Dr. Ravdin's clinic has decreased from 22 per cent in 1922–1929 to 11 per cent in 1935–1938, and to 2.6 per cent in 1938–1941. In the last 629 consecutive nonjaundiced patients operated on, there has been only one death, and this includes all types of biliary surgery.

The discussion was opened by Dr. Charles G. Mixter, of the Beth Israel Hospital. He favors cholangiography on the operating table at the time of operation. The closed method consists in inserting dye into the common duct through a ureteral catheter in the cystic duct, without opening the former. This is employed in questionable cases of small stones and apparently normal ducts, for common-duct exploration is believed to increase the morbidity and also the mortality in any but the most competent hands. The second type of cholangiogram is that taken through the T tube following exploration but before the patient leaves the table. Eighty-five of 88 cases of the latter type were satisfactory, and 75 came out as expected. Six residual stones were found, but in only 3 cases were they removed; the patient's condition did not warrant removal in the others. The type of patient that affords the greatest problem at present is the one with residual symptoms following operation and with a normal common duct. Some patients with so-called "dyskinesia" find relief from antispasmodics, but those with severer cases, accompanied by colicky pain and no jaundice, are usually not relieved. Dorsal sympathectomy, including the splanchnic nerves, offers some promise in such cases but the series is as yet too small to draw any conclusions.

Dr. Chester M. Jones, of the Massachusetts General Hospital, emphasized the value of clinical evaluation for diagnostic purposes, but stated that liver-function tests have a place in following the progress of certain cases. On the whole, medical cases differ from surgical ones in that there are fewer cells for regeneration. Cases were cited in which surgery is eventually necessary but is contraindicated at the onset. Since jaundice in the presence of stones usually indicates poor liver function and since the stones may not be the cause of the jaundice, the patient should not be approached surgically so long as bile is reaching the gastrointestinal tract; patients with high dye retention and slight jaundice are also poor risks, and liver tests are of some value in such cases. The diabetes associated with biliary-tract disease is invariably mild, and the removal of a diseased gall bladder and stones makes it even more so. Dr. Jones believes that the greatest risk in cardiac patients with biliary disease is leaving them alone. Esophageal hernia may give rise to similar stimuli, which are probably afferent to the heart without passing through the splanchnic nerves. Vitamin K may be used as a measure of liver insufficiency and often fails to cure or aid medical cases. It is now known that whole blood, but not pooled, contains prothrombin and thus aids in establishing normal levels.

BOOK REVIEW

Oral Pathology: A histological, roentgenological, and clinical study of the diseases of the teeth, jaws, and mouth. By Kurt H. Thoma, D.M.D., and Charles A. Brackett, D.M.D. 4°, cloth, 1306 pp., with 1370 illustrations, including 137 in color. St. Louis: The C. V. Mosby Company, 1941. $15.00.

Although the title of this work suggests a study of the pathologic findings in oral disease, it also represents a clinical study of disease of the teeth, jaws and buccal mucosa, with radiographic findings and excellent histologic illustrations.

The forty-five chapters include studies of hereditary, hormonal and nutritional influences in the development of the teeth and jaws, together with experimental pathology. In the latter subject, there has been the greatest progress in the study of oral disease in recent years. A review of the subject of dental caries based on an enormous literature is presented, with extracts from the more important articles and with a special reference to experimental work. The chapter on periodontal disease, with modern classification of the many lesions, helps to simplify the terminology of the subject. Diseases and tumors of the jaw are dealt with in a manner similar to that in a previous book, *Clinical Pathology of the Jaws*, published a few years ago. Chapters on diseases of the oral mucosa, lips, tongue and salivary glands are especially well illustrated in color.

The bibliography, which is very complete and up to date, includes the important articles in the foreign literature.

This volume is the most complete of its kind in the American literature, and its compilation is a result of many years of study of oral disease on the part of the authors. Disease of the oral cavity has been a neglected field in medicine, and this work should be of equal interest to the medical clinician, the oral surgeon and the clinical dentist. A knowledge of oral disease is valuable to both the medical and the dental practitioner, since the oral cavity may be considered the mirror that reflects the presence of disease elsewhere in the body.

(Notices on page xi)